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CHART-MAKERS

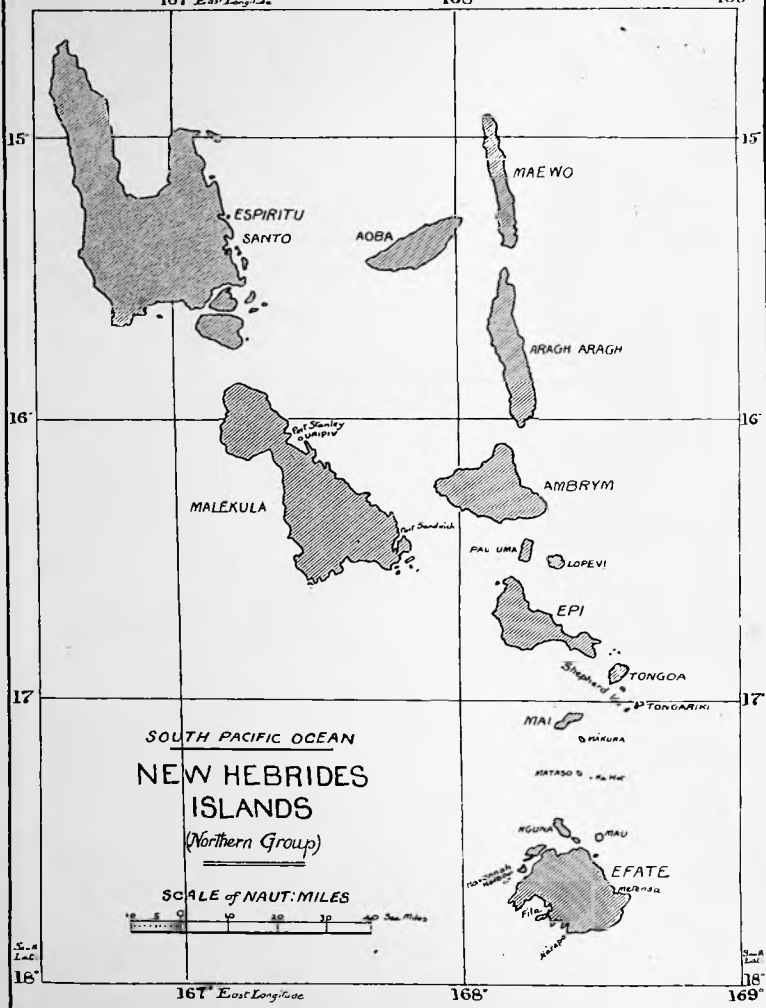
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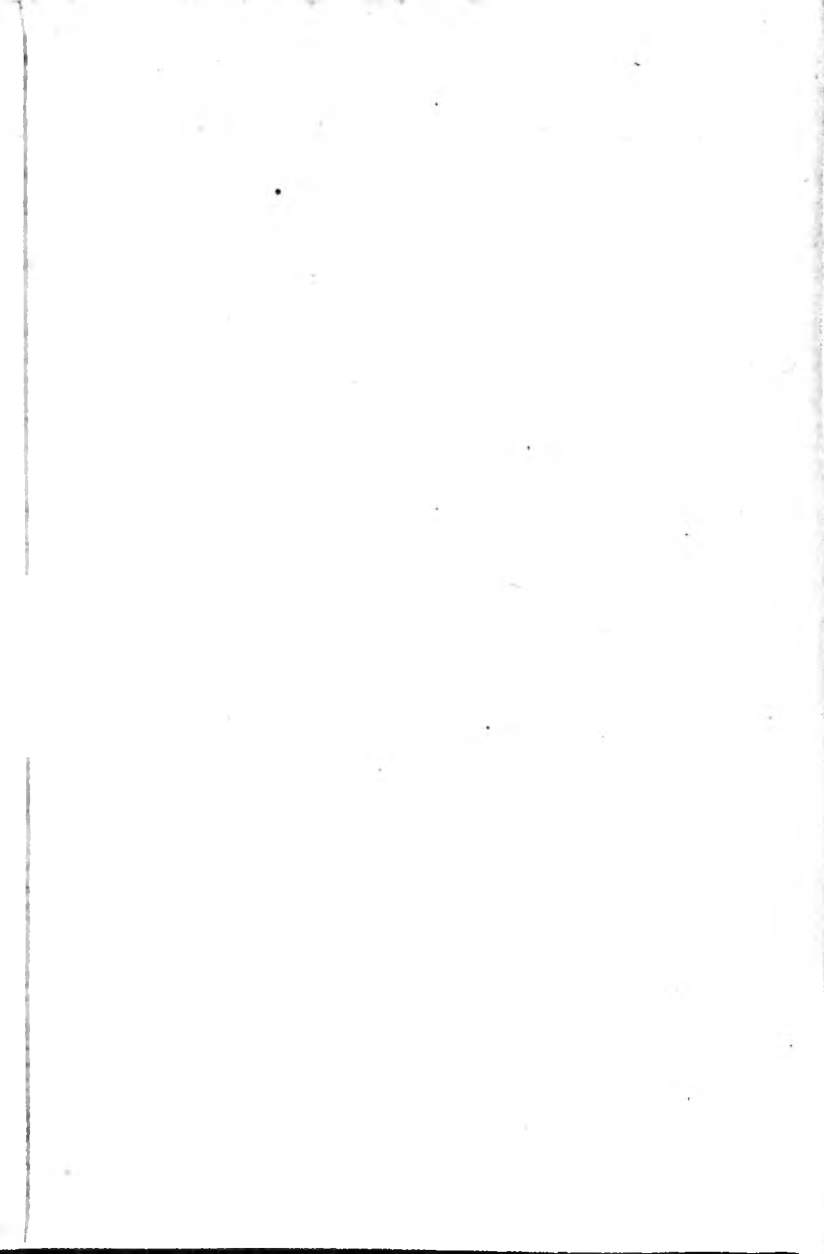
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## The Chart-Makers



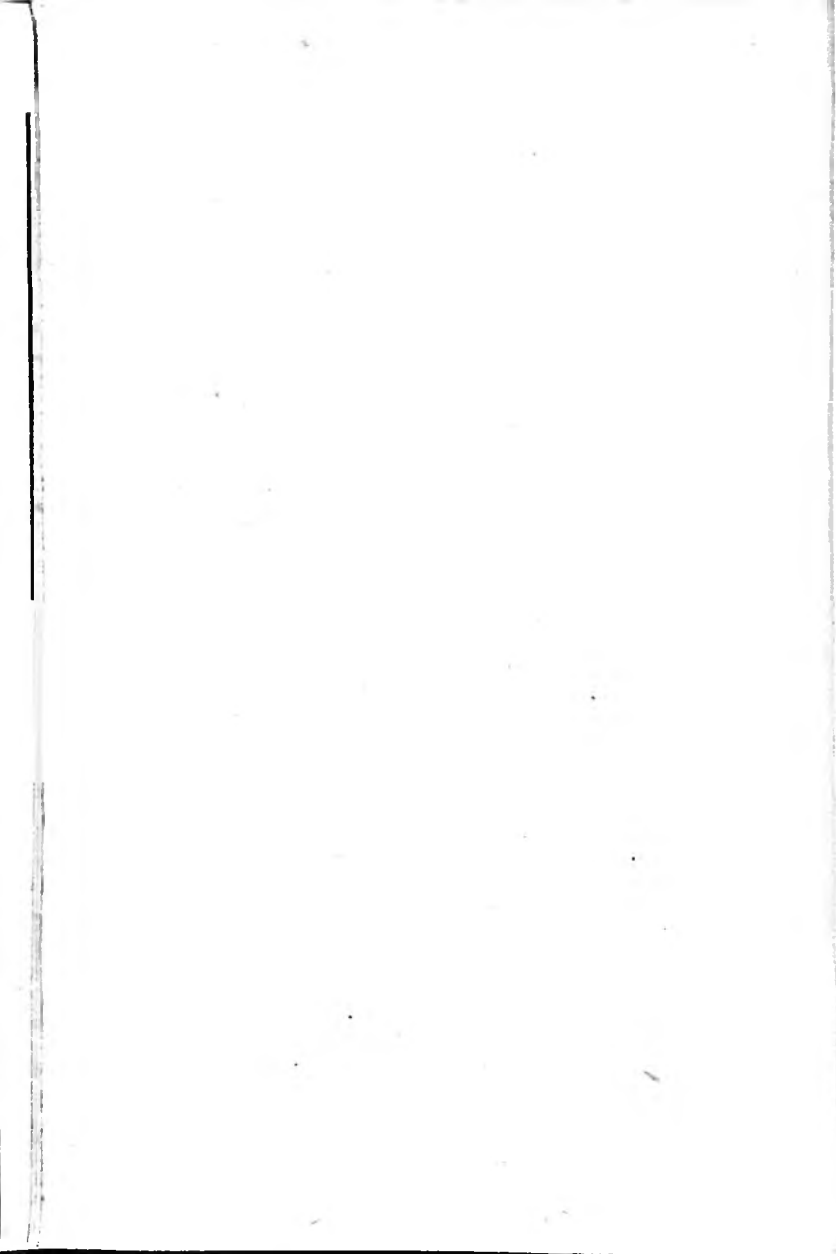
LIEUTENANT-COMMANDER BOYLE SOMERVILLE, R.N.

# The Chart-Makers

BY

VICE-ADMIRAL BOYLE SOMERVILLE  
C.M.G.

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## NOTE.

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THESE papers have appeared at intervals during the past few years in the pages of 'Blackwood's Magazine,' and are now collected in book form with the consent of the Publishers.

The photographs with which the book is illustrated have, with a few exceptions, been taken by the author, and have never before been published.

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NEW HEBRIDES ISLANDS (NORTHERN  
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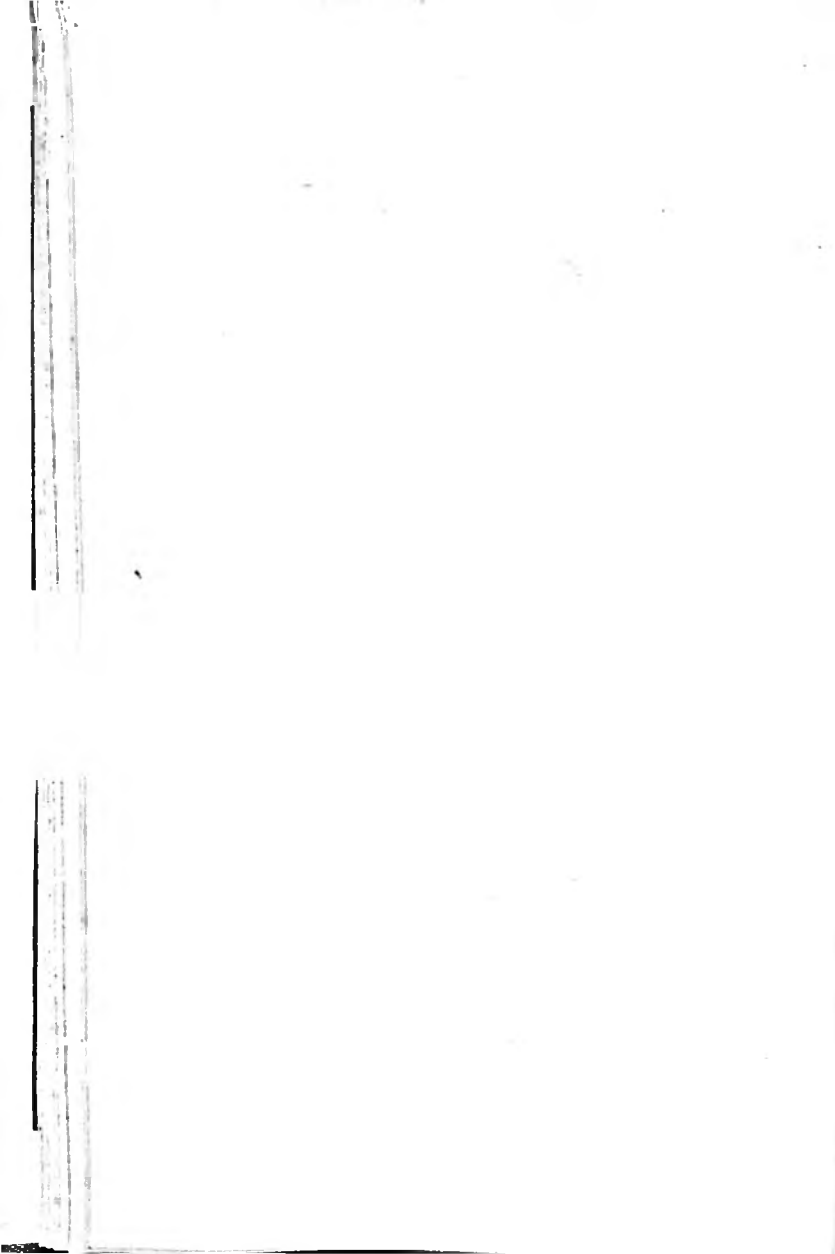
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## THE CHART-MAKERS



## CHAPTER I.

### THE QUEENSLAND COAST.

H.M.S. *Dart* was a schooner yacht of 400 tons which had been bought from a private owner for the Naval Service, and had afterwards been lengthened and fitted with auxiliary steam power. She was a good little ship, and in spite of the alterations to her shape and draught caused by the addition of engines, boiler, and screw-shaft, was still a first-rate sailer. She was intended to be the "Admiral's yacht" for the Australian station; but, by some dark official process, she became instead a surveying vessel, and thereafter fulfilled a long and honourable career in those waters in the service of the chart-makers. She was entirely unfitted for hydrographic work; but we are accustomed, in the Surveying Service, to be dealt out with "misfits," naval or otherwise, and to make the best of them. The *Dart* was by no means the worst we have had in recent years; in fact, she was rather above

the average. We were quite pleased with her. The crew forward on the mess deck numbered sixty; there were six of us in the ward-room—three lieutenants of the Hydrographic Branch, and three "Idlers," as the old Navy, with bludgeon-like humour, designated the Engineer, Surgeon, and Paymaster.

Besides, and over all of us, there was the Captain—the "Skipper," the "Old Man,"—a Lieutenant, like ourselves, but a few years older, having "2½ stripes"; such, in fact, as nowadays is styled "Lieutenant-Commander." He was separated from our profane society in the ward-room by a passage-way of at least six feet in length, at the end of which was the door of "The Cabin." Here, in splendid isolation, in accordance with the law of the Navy, he resided; and if occasionally he heard from the end of the passage a few home truths, they were probably welcomed by him as a corrective to the chorus of approval, and even of affection, which more often assailed his blushing ears, for he was the best of fellows, and we didn't mind if he knew it (as well as our opinion of his mistakes).

We commissioned in Auckland, New Zealand, and then set forth on what proved to be a devastating voyage to Sydney, New South Wales. In ordinary weather the trip would

have taken us a week, but this time it took four, each one of which was signalised by a fresh and furious gale. It was mid-winter, the merry month of June. We rounded the North Cape of New Zealand one anxious night in the teeth of a howling north-wester, and were only just able, with the sheets hauled flat aft, and with the faithful engines going at full speed, to claw the struggling, sagging ship off from the immense black cliffs close under her lee. The full realisation of the seriousness of things was veiled for me and for most of our new ship's company, both officers and men, by the anodyne of sea-sickness, which laid us flat in a state almost of coma, all unaccustomed as we were to the cantrips of so small a ship in so great a seaway. Our watches had to be kept through it all, wet, drooping, unheeding as we might be of all save personal misery. When, during my next turn on deck, the slow morning broke through the rain, we were past the headland, with the sheets eased. The danger of the lee shore was past, though not that of the grey waves, roaring hungrily at us. But the little ship was staunch, dancing over them, dipping and curtseying to them with a fine disdain. One monster, however, took her unawares on the starboard side, and as she lifted to it, hurled its foaming crest on the deck, carrying

all away to leeward, sweeping in a wash of icy water coils of rope and the men standing by them, over against the berthing at the ship's side, where, fortunately, they were brought up. Then, heeling the ship heavily to port as it passed under her, the great hill of water seized the lifeboat where it hung on the lee side swung out ready for an emergency, but tightly secured to its davits, and tore the boat bodily from them. With dim uninterested eyes of sickness I watched it floating away, uninjured, swept along on the crests of the great combers.

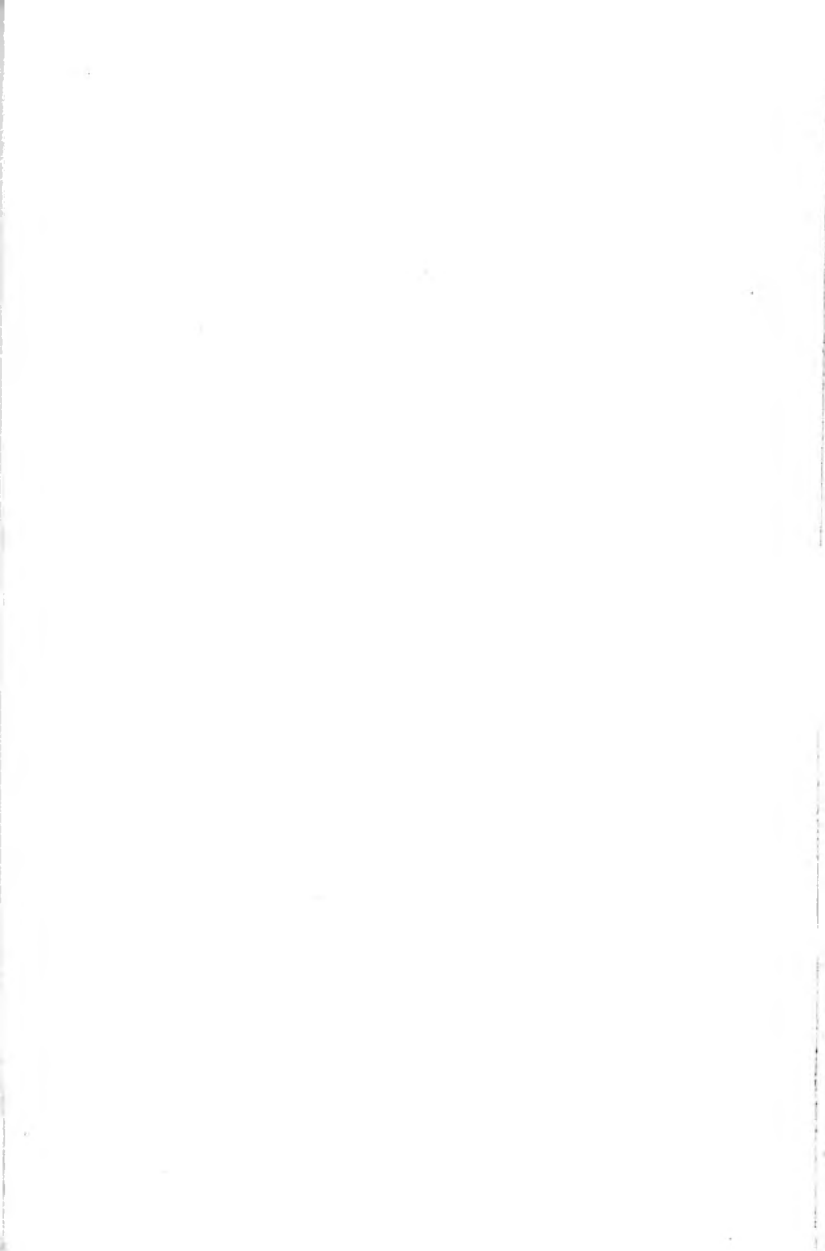
We heard later that it was washed up at Tom Bowling's Bay, in the North Island, where, still uninjured, some Maories found it on the beach. This first gale had hardly cleared off before, two days later, another began in an orgy of electric display. St Elmo's Fires appeared at each mast-head and yard-arm—the *Dart* was square-rigged on the fore—and on the peaks of both gaffs. It was in the gale which followed, coming from the eastward, that we were "pooped" as we ran before it, partly through the nerveless steering of an unfortunate sea-sick helmsman. A tremendous sea rolled in on us over the starboard quarter, deep and green, and poured down the companion-way, which, with its booby-hatch covering, faced aft, towards the oncoming flood. In doing so, it

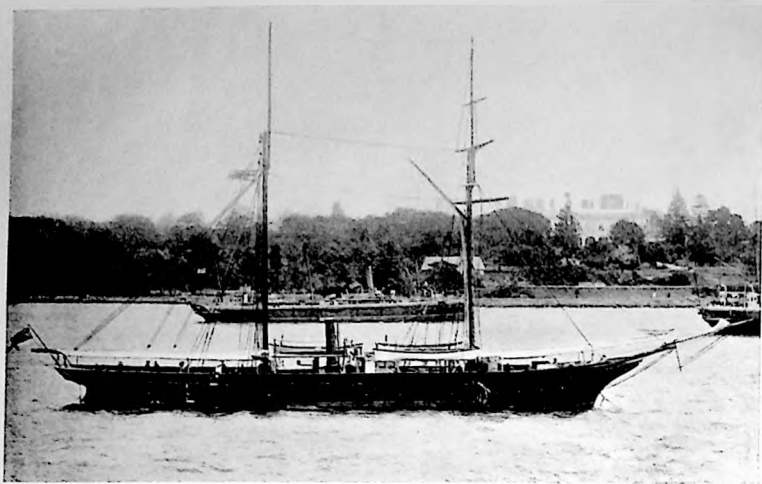
carried with it the first group it encountered—namely, the helmsman, the Quartermaster conning the ship, and the officer of the watch. The first of them shot down the ladderway to the bottom in a bruised and battered heap, the other two managed somehow to cling to the upper deck. In the ward-room, which was at the foot of the companion, the swirling sea discovered, and tore away from its securings, a can of lamp oil, which it broached, carrying its contents away with it, and floating them broadcast. The wave spread itself, and the oil with it, into each cabin and passage-way below the deck, so that every surface reached by it became like a sheet of ice, and the difficulty and even danger of getting about the ship, already great in the tumbling seaway, was horribly increased. Boots and bare feet carried the oil from the lower deck to every tread of the stairway, and unless the most extreme precaution was observed, you shot down it like the traditional “greased lightning”—greased, indeed,—and went up it clinging desperately to the hand-rail, hand over hand, for foothold there was none.

During that terrible passage we encountered two more gales, each with its own list of losses (a second boat went away from us in one of them); but we arrived at length off Port

Jackson, battered and storm-worn, with every sail but two blown out of the bolt-ropes. We steamed slowly through the Heads, and on up to Sydney, on our last few ounces almost of coal. It was a lovely day (at last), and the harbour was full of pleasure boats. As we proceeded to our moorings in Farm Cove, we were greeted with cheers and flag-wavings, not only from the boats, but from crowds of people gathered on the ends of the pleasant wooded points that diversify the shores of that which the proud inhabitants invariably speak of as "our beautiful 'arbour." One boat came alongside of us, and we hailed her to inquire what was "on." "Why," said the people in her, "you have been reported in all the papers for the last fortnight as 'lost,' and here you are! Hooray!" We were frankly amazed. That we had had a thoroughly horrid and dangerous time we were aware, but this result of our long and stormy voyage we had never expected.

It was quite an embarrassing resurrection. Our arrival off the Australian coast had been reported, we heard, from a lighthouse to the northward, where we had made the land the day before; and hence this popular reception. The news was telegraphed to the Admiralty at once, and reached London shortly before eight o'clock on Sunday morning, 30th June.





H.M.S. *DART* AT FARM COVE, SYDNEY.

In spite of the day of the week, in spite of the hour of the morning, the message was sent out at once by special command to sixty-seven homes in the United Kingdom, where, after a fortnight during which the hoped-for news came not, anxiety was settling down into despair, and even into the wearing of "mourning." It arrived soon after eight o'clock at my home in Ireland.

The postmaster, an ex-naval petty officer, and the greatly admired adviser and friend of my naval cadet days, did not wait to write out the happy news on the pink form, but rushed to the house by the shortest route, which was over the kitchen-garden wall. "Ma'am, ma'am," he called out breathlessly to my mother at her window, "the *Dart* is safely in Sydney! Glory be to God!" Such omission of post-office formality, not only in the matter of the unwritten message, but in the pious extension of its wording, could, I feel sure, only have occurred in Ireland; and if the costume in which my sisters, at the top of the backstairs, met the postmaster was, as I have heard, distinctly informal, this also was Irish, and did not, at that supreme moment, excite attention.

. . . . .

A month and more went by before the *Dart* was comfortably re-established as a going con-

cern, with sails replaced, and new ropes rove ; with the empty davits, whence the boats had been torn away by the seas, resupplied ; with leaks stopped ; with sea-sodden furniture and beds, oil-soaked carpets, and ruined kits renewed. Then, at last, we steamed northward into that wonderful region, the " Inner Route," off the coast of Queensland, where, in latitude 15° S., our work was laid.

The Great Barrier Reef of Australia is a coral breakwater that reaches southward for a thousand miles from Papua, protecting the Queensland coast, and baffling the Pacific swell at a distance of thirty miles from the land. The space between the Barrier and the shore is a festering intricacy of reefs, shoals, and islets ; it has taken the coral disease very badly. As you leave the Barrier and approach the land, the scattered patches lessen both in size and number, until you come at last to a belt of fairly clear water between the last of the reefs and the coast, forming a channel, which is, in most places, three or four miles wide, though sometimes much less. This belt of navigable water, which lies roughly parallel with the trend of the coast, is known as " The Inner Route." Through it ships provided with charts may travel in comparative safety and in smooth water from Capricorn Channel, where in the

latitude of the Southern Tropic the Reef begins, all the way northward to Thursday Island (known, for the best of reasons, as "Thirsty Island"), which lies on the tenth parallel, off Cape York, the burning tip of Australia.

The chart we were ordered to make was to replace one which had been made in the year 1841, which had itself replaced the original chart of the explorations of Captain Cook; and it chanced that the twenty-mile stretch of water and reefs between the coast and the Barrier, on which we were to start, was filled with special memories of that great man. Sailing northward in the *Endeavour* in June 1770, he got caught in the then unknown widespread net of coral, and struck heavily on a reef off Cape Tribulation (as, very suitably, he named it). With difficulty the ship was released from those cruel fangs; and with a lacerated and leaking hull, Cook sailed her slowly farther up the coast for forty miles, searching for a spot where she might be beached and repaired. At last he reached the mouth of what is now known as Endeavour River; and there he stayed for seven weeks, with his ship grounded on the soft mud, while he mended her, and cured his crew of scurvy. With so hard-sounding and unromantic a name as that of the great navigator, it is not possible to do much in the

way of local commemoration, and "Cooktown," afterwards built at this historic spot (now a busy and important port of Northern Queensland), represents probably the summit of human endeavour in that direction.

In August, Cook set forth again to extricate himself from the tangle of reefs and shoals that filled the unknown space between the land and the open ocean beyond the Barrier. By assiduous use of the sounding lead, and, above all, by a keen look-out at the mast-head, he succeeded in traversing in safety the very waters of which we were now to make a new, and final, chart. On that troublesome journey he anchored several times, landing at Point Look-out, at Lizard Island, and at Eagle Island, in order to view from these standpoints the best gangways among the reefs—all of which observation places became stations for our theodolites. Then keeping, as he tells us, the two high and rocky Direction Islands in a line, he sailed north up a stretch of clear water, until at last, five miles away on his beam, an opening appeared in the great sea-wall—a blue ship-passage between the white spouts and jets of foam to the northward and to the southward. Hauling to the wind, Cook took the *Endeavour* out through it, and away eastward into the open sea.

. . . . .

One of the first things to be done on starting a hydrographic survey is to choose and mark suitable points on the adjoining land from which may be stretched the invisible net of triangulation that is to enclose the field—the sea-field—of work, and bind together in correct relation its principal features. These starting-points are usually established on island-tops and cliff-tops, if possible in sight of one another. The points chosen must be clearly discernible through a theodolite telescope, sometimes from fifteen, or even twenty miles distance, so that it is necessary to build on these summits great cairns of stones, or, if no stones are to be had, to set up large wooden tripods, surmounted by bamboo flagstaffs, thirty feet high, with bright-coloured flags. If, when seen from seaward, any of these beacons will have a dark background, the cairn must be whitewashed, so as to stand out clear and definite against it. These marks are not intended only for triangulation purposes, and for vision as between theodolites, though that is their first intention. When the triangulation of the field of survey has been completed, and all the points have been plotted, so that the work of sounding over the enclosed sea area, the hydrographic work proper, can be begun, these beacons become essential for the purpose of fixing accurately the ship's position

by means of the angles between them, taken with a sextant, as she moves from sounding to sounding. The marks must, therefore, be such as can quickly and surely be picked up in the small field of a sextant telescope while the ship swoops and curtseys on the swell, and the Skipper is calling aloud on you to "Come on, and hurry up with that angle." As you value your eyesight, as well as the good opinion of the Chief of the Survey, so will you build your marks large and conspicuous and white. "Whitewash is the Surveyor's Friend," say truly all the text-books. In addition to these fundamental beacons on the cliff-crests and elsewhere, we surveyors have an unpleasant but necessary habit of painting large patches of whitewash, at distances of half a mile or less, along the whole of the low part of the shores surrounding our field of work. These marks are intended chiefly for fixing the positions of soundings taken by the surveying boats. While the mother-ship is sounding in the deep offing, her water-chicks will generally be seen, spread out over the adjacent sea surface, running lines of soundings between the shore and the deep or navigable water, where the ship's lines begin. The boats' share in chart-making is usually more important than that of the ship, especially in the case of har-

bour surveys, and this is the justification for these white leprous blemishes on the landscape. While they remain, the most primevally perfect landscape is vulgarised by them; but the kindly rains and seas gradually wash them away, and in the course of a few months outraged Nature will have resumed her reign, and the desecrated coast will have been purged of these impertinent footprints of the march of science.

To establish these marks, then, we four—the Skipper and his three subordinates—were distributed over the field of survey. Each of us had his allotted sphere, and it was arranged that each should land in his respective domain on the same afternoon, camp there for the night, and thus be on the spot to start work early on the following morning. My share was Point Look-out, with the bays on each side of it; and with this task I began my experiences as a hydrographic surveyor.

Neither I nor any of my boat's crew of five men had ever camped before (this was long before the invention of Boy Scouts), and I still remember the excitement and importance of the occasion, as the boat, lying alongside the gangway ladder, was loaded with provisions and water, with blankets and cooking pots and lanterns.

Above all do I remember the overwhelming ecstasy of exchanging an orthodox cabin-bunk, from which, with outstretched arm, I could touch the beams supporting the deck above me, for the unbounded bedroom of that mysterious untrodden shore, with the warm sand beneath, and millions of miles between me and the upper deck of stars. I have camped, I am thankful to remember, in many lands, for many a happy month since then, but the romance and the delight of it have never for me lost their freshness.

The beaching of the boat was, of itself, an adventure. It was a gently shelving shore, on which a moderate surf was breaking in steep-fronted waves. No matter how clever you may be with oars, anchor, and cable, it takes but a very little surf to slew a boat broadside-on to the beach, and then, as likely as not, the next wave will capsize her and land her in disaster. Seamanship books give all sorts of directions on the subject, and at first I followed the much-dinned-in injunctions of theorists; but it did not take long to discover their futility. I realised almost at once what is the only sure thing to do when once you are in the shallows. The secret is not to manipulate the boat from inside her, where such leverage as oars and rudder afford is

devoid of a fixed fulcrum, but for all hands to jump overboard and to man-handle her from outside. In this way, with solid ground under our feet, we six were easily able to keep the ponderous laden boat with head on to the waves; allowing each of them, as it passed, to help us by bearing her farther and farther up the beach, until she was at last in safety. Of course, in this proceeding, all of us got wet to the waist, and above it; but in that warm water and dry hot air, this was hardly even a discomfort. When you have been surveying in tropical seas for a few months, it never occurs to you to think whether feet and legs are operating in air or in water. All that is necessary to consider is the possession of strong boots. Horrible sores are the inevitable result of getting feet wounded by the poisonous coral, and it does not take long to establish the fallacy of the popular belief that salt water is good for cuts.

The spot at which we landed was the sand-choked mouth of a lagoon that lay, dark and dank, just behind the sea-beach. Only a few yards divided the two waters; but it was like the narrow barrier that divides life from death. Outside, the sparkling sea, tumbling in white and living foam on coral sand of almost as excellent a whiteness; inside, the gloomy mud-

bordered depths, unmoving, save where, here and there, a noisome bubble ascended and quietly loosened at the surface its horrid gas. The lagoon's edges were grown over with deep-green mangrove trees, whose red hooping roots crawled through all the shallows. There were high mangrove clumps as well, on every detached mud-bank, so that the whole lagoon was divided up into dim and narrow alleys of shaded water—paths to the hidden homes of crocodiles, of banded water-snakes, and of detestable crabs, disposers of the dead. A huge crocodile's skull lay whitening near the water's edge. It was at once annexed by one of the boat's crew for a "curio"; and, as we gazed at it in some wonder, for we had not expected to meet with such monsters on an Australian sea-beach, there came out at us from the lagoon a starving trumpeting band of grey-striped mosquitoes. In order to keep these tigers of the air at bay, we broke off branches of the mangrove trees, only to find ourselves in the jaws of a yet more ferocious foe. Every stick and every leaf was the hidden lair of myriads of large green ants, who fell instantly upon us, storming furiously down the necks of our shirts, clinging to the undefended bodies within with bull-dog grip, and emitting their fiery poison. Flinging away our branches,

we fled the scene, stripping madly from us as we ran the ant-infested garments, until at last we gained the top of a little hill which overlooked the edge of the coast. A gentle wind was stirring, sufficient to blow away the mosquitoes, and very soothing to the hot much-bitten skin as we sat there, half-naked, and exterminated the remainder of the green army, now unable to call up its reserves. It was so pleasant at this spot that I decided to make here our camp for the night. Returning cautiously to the beach, we dragged the boat up to well above high-water mark, and brought back with us to our place of refuge such "gear" as would make us a shelter for the night. Two oars, lashed in the form of an X, went at one end of our bedroom; two more, similarly crossed, were planted in the ground at the other. The boat's mast was laid on the top as a ridge-pole, and the lug-sail was stretched over it, slanting to the ground at both sides, to be roof and side walls all in one. It was already quite dark before we had finished cutting, from a handy grove of fragrant gum-trees, as much wood as we thought would be sufficient for the fire; and then, as soon as supper was cooked and eaten, one very tired officer and five very tired bluejackets laid themselves down for the night. In the matter of

camping, ignorance certainly does not lead to bliss, but the awakening to knowledge comes soon ; indeed, you can scarcely call it awakening when there has been no sleep. In less than an hour I had discovered, firstly, that for a camping-place you need flat ground, since the slightest slope dispels restfulness ; secondly, that the amount of wood which five men can collect in an hour will burn up in less than that time ; thirdly—but there was no end to the branches of knowledge that grew with dire rapidity on the Tree of New Experience. The wind died away, the smoke-smudge from our fire did the same, and the mosquitoes came down on us like strong men armed, singing songs of triumph as they stabbed and drank deep. Not until about four o'clock in the morning did slappings and cursings cease around me, and the weary begin to find rest.

An hour later—and it seemed but the winking of an eyelid—I opened my eyes quietly but definitely, possessed by the uncomfortable feeling that somebody was there. There had been moonlight all night, but its liquid radiance was now pouring away out of the sky behind the hills to the north-westward, as the growing splendour of the new day, sweeping up from the sea to the eastward, came into triumphant occupation of its realm. I sat up, and in the

mingling lights I saw three Blackfellows standing at my feet, gazing down at me. They were all of them perfectly naked, and each carried in his hand a long wooden spear. One of them gave a little chuckle, and then, looking towards a hillock half a mile inland, softly called into the calm air "Cooo-ey." Back from the hillock at once came the same cry, clear and soft; and I could see, for by now I was on my feet, a little group of men standing on its crest, just visible in the dawn light. My boat's crew were awake by this time, and I daresay none of us was free from a somewhat chilly feeling of dismay on realising the ambush in which we had awakened to find ourselves. The situation was one against the possibilities of which I had not been warned. The native savages were said to be "practically extinct," and, in any case, it could have occurred to no one to expect to find human beings among these crocodile-haunted lagoons on the desolate border of the sea. It was true that Captain Cook had seen a naked footprint in this identical sand of Point Look-out where now we were camped; but that was one hundred and twenty years ago, and the fact did not seem to be a sufficient reason for keeping any watch beyond that which the mosquitoes had compelled from us. I had never seen Blackfellows before, but

I knew they were reckoned as "dangerous"—such as remained of them,—as well they might be, seeing the many and terrible old scores they had against the white invaders. The rest of the gang had come up by this time, ten or twelve in number. They were about two to our one; each of them had a weapon, and we were unarmed. But, as it fell out, they were quite friendly. One of them could even speak a few words of English. "Goo' day, boss," he said, very amiably; "gib it bacca." After so sensational an opening, one now recognises a touch of bathos in this *dénouement*. But, at the time, this did not occur to us. Far otherwise. We thankfully distributed among our visitors such ship's biscuit and "bacca" as we could spare; and these offerings were accepted by them with, it is possible, some feeling of gratitude. There was, however, no more outward demonstration of it than is made for similar benefactions by monkeys at the Zoo. There was just the same simian wary-eyed acceptance, and the same long, hairy, outstretched arms. No risks were to be taken. The sun came up out of the sea, and the little herd of Blackfellows disappeared into the bush, spears in hand, for the day's hunting. It fills with strange feelings the civilised heir of all the Western ages when first he sees grossly

naked shock-headed man sliding, untrammelled, between the trees of his native forest. A snapshot of ancient memory is suddenly exposed on the sensitised plate of the mind; and one sees oneself in a flash as dark, slim, and swift, with heavy-browed eyes, full of malice and watchfulness, prowling for food by day, nesting anywhere in the woods by night among the torn-down branches of trees. . . .

By this time the "billy" had been induced to boil, and breakfast took place amid the ruins of last night's camp, now hated, but once the admiration of its constructors. When you are ashore in Australia you do as Australia does, and make tea in an ordinary can, a plain tin cylinder such as encoffins bully beef, but furnished with a practicable lid and a wire handle. This is named a "Billy." When you are on board a British man-of-war, the same simple vessel is called a "Fanny." The superstition exists that tea made in a "Billy" (or "Fanny," which you will) is the best to be had—a superstition having its basis probably in the fact that you can actually see that the water is boiling before the addition of the tea leaves. What the origin of the name "Billy" may be, I know not; but "Fanny" has a gruesome etymology. Years ago, in the 1870's, at just about the time when "tinned mutton"

first came into the Navy, to alternate once a week with the then beloved (but horrible) "salt horse" and salt pork of our even more salted sea-ancestors, it happened that a certain Frances Adams was murdered. Her remains were cut up and distributed variously by her murderer, and the legend ran that a portion had been found in Deptford Victualling Yard. When, as soon happened, this legend became "a fact," preserved mutton was, throughout the Service, known as "Fanny Adams"; and though the appetising origin of the term is now largely forgotten, the tins which were alleged to have sepulchred the poor lady's remains still universally commemorate her Christian name. It is now extended to any similarly shaped can, quite innocent of the Victualling Yard, such as is supplied with the mess-gear of every lower-deck mess.

. . . . .  
On Point Look-out we built a splendid cairn of the large stones which lay in profusion all around. It is a pleasant headland, 300 feet high above the sea, grassy and clean, with patches of sand, as Captain Cook remarked, "of an exquisite fineness."

Cairn-building is not an easy task for sailor hands to do, but it is quite interesting. A mere heap of stones will not suffice. It must

be scientifically constructed, circular, with dry-walling exterior, firmly bonded ; and the whole structure must have a slight " batter," sloping inwards, like the foot of a lighthouse. Finally, the work is crowned with a tall flagstaff, carrying a large calico flag, brilliant in red-and-white, and the cairn itself is whitewashed. Later on, one regards from seaward a satisfactory mark with the happy pride of the successful artist. " Look at my cairn on Look-out," you proclaim, " twinkling away like a little star."

Few things are so agreeable as watching other people at work. Through a glass I could make out the far-flung groups of my brother-builders about the field of survey, and mark their progress as the flicker of white came from each new stopping-place, like lamp-lighters along a street. The view was fine, and the breeze cooling in the restful shade of our own noble construction, where we sat, with our backs supported by its handsome curve. We drew several breaths, and they were long ones, before descending to the boat and the hot shore-line, to continue our labours there.

The pale blue coral-enclosed sea was spread in a semicircle before us, sprinkled with reef-surrounded islets and a myriad shoal patches. Below us, three or four miles away, were

two large ugly ones, brown-surfaced, cream-edged with surf. Beyond lay another reef, a narrow crescent, along the crest of which ran a gleaming strip of coral sand, terminating in a tiny islet, on which stood a solitary tree. This was Eagle Island, so named by Cook in 1770 in consequence of finding upon it an enormous nest containing young sea-eagles. When we landed there later on, it was interesting to find still an enormous eagle's nest, still occupied; evidently it was the seat of a county family.

Beyond Eagle Island was Lizard Island, a ridge of granite three miles long and over a thousand feet high, which sheltered the *Dart's* main anchorage, and was the base of operations and our home from home. It formed the *pièce de résistance* of the *menu* of our survey, rising boldly from a sea-table the surface of which for miles around was diapered like a linen cloth with an intricate pattern of brown reefs and flat green islets ended and bordered by the firm line of the Great Barrier Reef beyond. Lizard Island was seventeen miles away, so it was with the eye of faith only that I could see our agile Skipper sweating his way up to its summit on a cairn-building expedition; but the vision was sufficiently vivid to inspire thankfulness, on that baking day, that this expedi-

tion was his share of the proceedings, and not mine. Looking to the southward along the mainland from our point of observation, there were ten miles of sandy shore which separated us from the next headland, named by Cook as Cape Flattery. It is a great buttress thrust out from the coast-line, with rough ridges and crags reaching down on three cliffy sides into the sea, which stirs white and busy at its feet, whilst on the fourth side, to landward, it slopes gradually into a soft smother of low and shifting sandhills, with gleams of blue lagoon waters between them. Beyond these, and nearly in the same line, was Cape Bedford, another buttress not unlike Cape Flattery, and of the same height. It was beyond the limits of our survey; but the wide sandy bay on its southern side, where the coast takes a sweep inwards to the mouth of the Endeavour River, was the scene of my second adventure with Australian natives. The account of it may, therefore, fall into history here, though actually it took place a few months later than that just recounted.

The often boisterous south-east Trade wind had finished for the year, and had died away; the weather was fine, and the ship and her boats were consequently making the best of the smooth interval for sounding. Then came

to the Skipper the engineer officer, to say that a sudden important need had arisen in the engine-room for certain small stores, which had been sent for, and were, we knew, waiting for the ship at Cooktown. Cooktown was fifty miles from our base at Lizard Island; and to have taken the ship there to get the stores would have meant the loss of two precious days from our work, to say nothing of the waste of coal for the double journey. If the fact that a certain best girl lived at Cooktown lay at the root of the "urgency" of our susceptible man of machines, as we others in the ward-room secretly suspected, he was (to put it vulgarly) "sold a pup." The Skipper decided not to move the ship, but instead to send the steam-cutter on the errand, these important stores being, unfortunately for the best girl, no more than an easy boat-load; and I was sent in charge of the boat, to navigate her through the reefs. We were to sleep the night at Cooktown, and return on the following day. Food, coal, and water were piled into her, and we started in the cool calm of a lovely morning, hoping to arrive at Cooktown by about sunset, for the little steam-cutters of those days could not be counted on to keep up more than a 5-knot speed.

"All went well," as the newspapers com-

pendiously describe the dull interval that precedes a really juicy disaster, until, in the early afternoon, we found ourselves off Cape Bedford aforementioned, after a journey of thirty-five miles. Then, with malignant suddenness, there sprang up a fresh breeze dead in our teeth, soon followed by a choppy head sea. It was quite the wrong time of year for a southerly wind of this or of any nature; but, in defiance of this fact—elementary in every sense,—wind and sea steadily grew worse and worse. By five o'clock in the evening we were still off Cape Bedford, still nosing into it heavily, and our speed had dropped to something less than one knot.

There was by now scarcely any coal left for the furnace, and the tank of fresh water for the boiler was nearly exhausted too. All hope of reaching Cooktown that night vanished. Sunset was rushing upon us, and all that remained to be done was to anchor the boat off the coast for the night and to land the next morning, cut wood for the furnace, fill the water-breakers with fresh water for the boiler, and, thus replenished, to steam the remaining ten or twelve miles to Cooktown. The unpleasant part of it was that there was no sheltered water within our reach that was shoal enough for anchorage. On the contrary, the only place to which we

could fetch with the few pounds of steam pressure still remaining in the boiler, was to a position off the open sandy beach southward of Cape Bedford, where we should have to anchor off a dead lee shore, completely exposed to both wind and sea. Nothing, in fact, could have been much worse. White curling waves were breaking far out from the shore over the shallows in curved lines of foam ; and when the steam at last failed, we anchored as far outside them as possible, paying out every inch of our small chain cable, so as to lessen the possibility of dragging the anchor.

Fortunately, it sank fairly well in the sandy bottom ; but it was far from being a good holding ground. We all spent a night of complete wakefulness, caused not only by the discomfort of the cramped boat, but, much more, by grave anxiety.

With the first glint of morning came the need and the resolve for immediate action. The southerly wind, though lessened in force, still continued ; and it was evident that through the night the boat had been dragging her anchor slowly but decidedly into the shallows, in which, if she should bump on the bottom and get broadside-on, she would certainly become a total loss.

It was necessary to swim for about two

hundred yards through the surf in order to reach the beach—a broad and gentle slope of white sand. Behind it there was a thin wood of gum-trees, which would, I hoped, provide us with fuel, and behind the wood again we could see a lagoon, presumably of fresh water; but investigation was necessary. Leaving the coxswain to look after the boat, I stripped and jumped in, not, in my own mind, exactly regardless of sharks, yet not (I hope) exhibiting trepidation, for I knew that some of the crew would have to follow me presently to cut wood and fetch water. There was no real danger of sharks in shallow breaking water, but any idea of it had to be suppressed ere it arose.

When I was about half-way to the shore, with head down, swimming among the cresting waves, I heard sudden shouts from the boat, borne on the wind above the roaring of the surf. I reached down an exploring foot, and, finding ground, stood and faced seaward to see what was the matter, in cold expectation of—I knew not what, possibly a capsized boat. The boat was there, riding to her anchor, much as I had left her, only all hands were standing up, shouting and pointing to the beach. “Look out, sir!” (I heard undisguised alarm in the voices.) “Look out; look ashore!” I turned, and then indeed I felt a sudden qualm, for

there I beheld a strong gang of naked Black-fellows, twenty or thirty of them, rushing down the belt of sand towards me, spears and waddies (which are extremely unpleasant handy little clubs) in their hands. There was no retreat; it was a matter of being speared in the water in any attempt of mine to buffet back through the waves to the boat, or of being clubbed on the beach when I landed.

Awful stories had been told us at Cooktown, since our first encounter with Queensland aborigines, of their malignance, of their treachery, and every one of these yarns came flying into my mind to reinforce my consternation. I determined (I know not why) that a death on the beach would be, on the whole, preferable to a watery one, and, without further hesitation, but with a thumping heart, waded ashore. What was my amazement, not to say my relief, when I reached the land to find my hand grasped and shaken vigorously by each wild-looking savage in turn. Incredible as it seemed, they were friends, and not foes, after all. Next, and almost as incredible, there appeared a white man, completely clothed, redundantly clothed, as it seemed to me, who at that moment was as untrousered as the dark remainder of the assemblage.

The situation was then explained. This was

a Government settlement of aborigines, gathered here from the surrounding bush into a single encampment, with the idea of weaning them by degrees from nomadic savagery; and, by teaching them some primitive form of agriculture, to induce them to abandon their wild habit of wandering through the bush, hunting for food, and fighting for existence. Several such settlements had recently been started, and the white man living among them was their regularly appointed instructor. To him I explained the grievous situation of my steamboat, and the effect was both happy and immediate. He commanded, and a gang of strong-swimming blacks dashed into the surf, and presently surrounded the boat. Since I had left her she had got into a perilous condition. The tide had swung her broadside to the wind and sea, and the deep heavy hull was now being urged inward by both forces faster and faster. The anchor, now almost useless, was dragging through the ever-looser sand, and the boat was now in barely four feet of water, and already inside the first row of breaking waves. The blacks knew perfectly well what to do. Some of them seized the boat's gunwale on both sides, and turned her bows so that she was again heading the surf. Another gang dived down, and following the line of the cable, some-

how between them lifted the anchor—a really astonishing feat, which I should not have believed to be possible if I had not seen it done,—and then, swimming with it, laid it out, dropping it on the bottom far ahead of the boat, in deeper water, while the boat-party moved the steam-cutter out to suit the length of the cable, kedging her out, bit by bit. There the “wet-bobs” of this admirable band of converts staid by the boat, keeping her at a safe distance from the rollers, while a second gang, the “dry-bobs,” rushed into a mangrove clump behind the beach, and chopped wood in a perfect frenzy of excitement and enthusiasm. Mangrove wood produces in a furnace the fiercest heat of any timber (they seemed to be aware of that fact, and chose mangrove in preference to the more handy gum-wood), and they rafted it off to the boat in large bundles, afterwards bringing ashore with them the boat’s breakers (small oval-shaped casks) to fill with fresh water from the lagoon.

Without all this help, the steam-cutter must undoubtedly have been lost in the surf, and we unfortunate survivors would indeed have had a poor time of it tramping the trackless and unknown bush to Cooktown. Instead of this disastrous termination, we had steam up once more by 11 A.M., and were comfortably under

way on our proper element, both boat and crew saved for many future surveys. Our gratitude to our preservers, meagrely expressed in kind, as it only could be from lack of material, was received nevertheless by them with satisfaction; quite different from the silent wary absorption of gifts that we had met with on our first encounter with Blackfellows at Point Lookout. Possibly a sense of gratitude is one of the first evidences of a dawning civilisation, but as we steamed away our departure was signalised by wild howls, wavings, and dancings along the beach abreast of the boat for a long distance. The boat had been piled from end to end with wood. We could not possibly have carried more, but it was wonderful to see how quickly it was gobbled up in a furnace constructed for coal. It proved insufficient to take us even the ten or twelve miles to Cooktown. We had to anchor off the mouth of the river, where the signalmen on Grassy Hill, at the entrance, saw us. We semaphored to them, and shortly afterwards a large steam launch appeared, which towed us satisfactorily, if ignominiously, into safety alongside the town wharf.

The following day, well stocked once more with coal, water, and food, and having taken on board those infernal stores for the engine-

room, we set forth again for Lizard Island. Still followed by the unnaturally persisting southerly wind—but this time it was an assisting friend,—we reached the *Dart* at her base late in the evening.

After all the unnecessary adventures we had been through on his account, it was some satisfaction to see the blank stricken face of the engineer officer on his discovering that I had brought back no letter for him.

## CHAPTER II.

## BEGINNING THE SURVEY.

THE establishing of triangulation stations, the marking of the coast with cairns, flags, and whitewashed marks for sounding operations having been accomplished, there began for the Skipper and the two older "hands" the pleasant work of measuring a base and of triangulating, tasks that were combined with the extremely boring one of teaching me ("our youngster") how to do the same. The theodolite, that instrument of terrifying name and appearance, was made to disclose to the "Makey-learn" the ridiculous simplicity which it camouflages under a bewildering array of milled-headed screws, thrusting themselves forward from every part of its frame; and the "sounding-sextant"—slightly different from the usual ship-board instrument—was made to become a familiar friend. I accompanied my instructors on every expedition in their pursuit of angles and measurements, thus visiting every island and every

summit in all our field of survey. It was a wonderful and glorious change from any naval life I had ever had before. The work was hard, both physically and mentally; the days were long and hot, but also they were happy. One wore old clothes; there was bathing and sailing and hill-climbing; there was fishing and shooting. Above all, there was camping. Interpenetrating these pleasures was the feeling of solid satisfaction that the work through which they came was to have a practical and lasting result. If you sailed a boat, it was not a mere aimless pleasure; you were going somewhere for a useful purpose. When you climbed a hill, it was to get angles for the triangulation on the top of it. When you camped, it was for the sake of the survey, slowly growing under our hands; if you fished or shot, it was very definitely and practically "for the pot" rather than for "sport." Even bathing had its practical use, for it saved fresh water, and therefore coal (by means of which it was distilled) was spared for steaming about taking soundings.

Following the actual work of getting the angles came the calculations of the results, with which it should be possible to plot to scale on the great "plotting-sheet" the exact relative positions of the triangulation stations on the hill-tops and elsewhere. "Plotting" is a work

of the highest sanctity, only to be undertaken by the holy hands of the Skipper himself. Around stand the assistants with held breath, ready instantly to produce, at the word of the head plotter, the straight-edge, the beam-compass, the paper-weight, or the immediate calculation of the chord of any required angle. Ready, also, to rejoice when the intersection is exact of three or more lines of the triangulation which, according to the calculations, should pass through one particular point, and its accuracy has been revealed under a strong magnifying glass. Every such point successfully plotted represented the correct laying down on the chart-to-be of one more shore station in the triangulation, and became part of the fundamental basis of our future sea work.

Ready as well, as sympathetic assistants, to add their heart-felt maledictions to those of the head plotter, when, for some infernal reason, such as the stretching of the paper or the slipping of the straight-edge, things have gone wrong, and the intersection is not exact, but is a vexatious little triangle, known as a "cocked hat," necessitating a complete replotting of the "Point."

Thus by degrees there appeared on the plotting-sheet a series of tiny needle-pricked

marks, or "Points," circled in crimson, which represented the identical spots of our theodolites at Point Look-out, at Cape Flattery, at Eagle Island, at Lizard Island respectively, as well as at many other places scattered over our chart, now in the embryonic state of its existence. When every theodolite station and whitewashed mark had thus been plotted, a new stage of outdoor activity began. To each of us, chief and assistants, there was allotted a portion of the whole field of survey to be his special kingdom, of which he was to work out the details of coast-line, reef-line, and depths of the sea. We each had to prepare a "field-board"—namely, a drawing-board of handy size, for use in a boat, covered with drawing-paper. To this was transferred, by an exact pricking through from the plotting-sheet, all the red-circled points that appertained to each such kingdom. A hydrographic survey differs from a land survey in this—namely, that in the nature of things it must be plotted "in the field" as the work proceeds. It cannot be kept in the form of figures in a notebook, to be translated into a map later on. So each day, as the work of that day is plotted on a field-board, it is at once traced through on to a large "collecting tracing," embracing the whole survey, and it is thus possible to see what

portions—especially of the watery area—have been completed, and what there is still to do. So by degrees, the “Great Work,” as it is often described, grows. It is a work great in every sense. A plotting-sheet is commonly between five and six feet square. Possibly about a third of this space will represent dry land, but the remainder, “our heritage, the sea,” will be completely covered with line upon line of small figures, crossed in some places, and recrossed and interlined where irregularity in the depths has caused suspicion that a shoal or rocky patch exists near by, which anxious search has confirmed. The eye aches to behold so much arithmetic. Each of these figures represents the position of a “sounding”—that is to say, the depth of the sea at that point at the time of the lowest possible tide level—i.e., the least water ever to be found at that precise position. There are often between twenty and thirty thousand of such depth figures on a completed survey; and this alone may give some idea of the amount of labour that goes to the production of a chart. Besides the depths of the sea, there is the coast-line to be delineated exactly, and the topography of the land behind it; for the mariner, often a stranger facing a strange land, wants, not unreasonably, to know whether to expect to see from his ship a flat shore or

a cliff, mountains or plains, forests or cleared land, uninhabited wilds or the houses of men. All of this field-work now lay before us, and to each was allotted his share. To the Skipper himself, the ship's board, on which the soundings to be taken by the ship were to appear; to each of us, his assistants, a boat's board, on which were to grow reefs and islands and lines of soundings out from them into the deeper safer water, where the ship's work joined on.

The way in which a youngster usually learns to sound from a boat is first by "being put in the way of it" by practical instruction, supervised by an "old hand," and then by being sent off by himself in charge of a boat, with a week's provisions, to deal with some part of the chart where amateur work and crooked lines of soundings will matter least, there to struggle with the many difficulties and adversities that are bound to beset him, and to overcome them single-handed. Thus it was that I found myself despatched one Monday morning in the steam-cutter, manned by a crew of five men, with an attendant small boat known as a "skiff," to a certain low rocky island about twelve miles from where the ship had her base, there to start work "on my own," and not to return, except under emergency, until the following Saturday night.

My island base was an oblong, half a mile long, and a quarter of a mile broad. Half of it—the western half—was a hillock, 150 feet high, covered with trees and grass; the other half, facing the Pacific, was low and shrubby. The islet stood on the southern horn of a great crescent of brown reef, dry at low water, which swept northward from the islet in a magnificent two-mile curve, embracing a blue bay of shelter from the constant and stiffly blowing south-east Trade wind. It was fronted by a beach of fine white coral sand, and altogether it was an ideal spot for boat anchorage and for a camp.

There was another beach on the western side of the islet below the hillock, almost equally well sheltered; and it chanced that on our first arrival this was the point for which we made, being then unaware (so bad was the only existing chart) of the better sheltered bay and sandy landing on the northern side.

The sun was setting rapidly, and we had to hurry ourselves and our things ashore, and set the evening pot at once to boil while we prepared a bivouac for the night. Remembering our experiences with the mosquitoes at Point Look-out, I climbed up the lee side of the little hill to its summit, to a point where we could feel the Trade wind strongly enough to keep

the vile insects at bay and ourselves cool. Here after supper we settled down in our waterproof sheets and blankets, and by nine o'clock were all deep in slumber. Towards the middle of the night the moon set, and through the gradually deepening darkness there came, winging his way over our hill-top, a great bird. He was evidently cutting things a bit fine, and, all unknowingly, passed but a few feet above our prostrate bodies; so low, indeed, he flew that the cleaving of the air by his wings gave forth a rushing sound, with something in it so awful, so near, and so foreboding, that it awoke every one of us with beating hearts. It was as if each one of us had been ridden by the same nightmare; and we sat up as one man, filled with a strange and grim feeling of coming disaster. Those who have been through a midnight air raid will realise the exact sensation.

The boding sound dwelt heavily with me all the following day—indeed, I have never forgotten it,—and old Huxley, the leading stoker of the steam-boat, spoke of it to me later on in the light of the events that followed, and described the general consternation it had caused the boat's crew, at first unacknowledged, but then confessed.

The next morning's daylight revealed to us,

from the Darien summit of our bivouac, a wonderful scene. In the distance, to the eastward, was the blue line of the outer ocean; in the middle distance, the foaming Barrier; nearer still, the enclosed scattering of brown reefs and of a myriad tiny islets; while immediately below us was the wide semicircle of the reef upon which our islet stood, with a calm pale blue anchorage embraced in its arms. I decided at once to take the boats round to that side; and gathering together the gear hastily landed the evening before, we steamed round, anchored the big boat at a suitable position, and landed anew in the skiff.

We had, of course, brought with us tents for our camp; but, to my surprise, I found, just within the shore fringe of scrubby trees, and concealed by them, a clearing, in which stood a collection of ramshackle and deserted wooden huts, set in the midst of a garden of sweet potatoes, tomatoes, and brinjals, all straggling wild. Among them were a few pawpaw trees, their tops surrounded by an accommodating supply of yellow and green fruit, ripening under a crest of leaves and flowers. Close beside them was a well of moderately good water.

On first sighting these traces of humanity, I imagined them to represent the sad legacy of some enterprising person—a pearl-fisher, per-

haps,—who had attempted to establish himself on this islet and failed to make good; but presently I picked up a piece of notepaper covered with faded writing, which was lying in the garden, and having read it, the romantic truth dawned on me. This was a barracoon—a cage for “blackbirds!”

In those days, in spite of the best efforts of the Queensland Government to prevent it, there was still going on what was known as “blackbirding”—namely, the illicit recruiting of native labour from the Pacific Islands for the Queensland sugar plantations. This was carried on by means of sailing brigs, which, dodging the men-of-war that policed the Solomon Islands, New Hebrides, and other Melanesian Islands, collected “labour” by specious promises, and by the more solid bait of tobacco, bush-knives, and calico (which represent the currency of the islands, and are known compendiously as “trade”). As soon as the hold of the brig was full, and, if possible, overfull of humanity, male and female, she sailed for the nearest practicable entrance in the Great Barrier Reef, and having passed through it, deposited her wretched black cargo on such an islet as this one on which we had accidentally dropped. From these depots the “labourers” were got away by driblets, in boats, to unwatched parts

of the mainland coast, twenty miles distant, and thence were taken up to the sugar plantations for sale to unscrupulous managers, who wouldn't ask questions.

As to the return voyage eastward to their island homes at the conclusion of the "contract," there was seldom much difficulty. Cruelty, disease, and almost above all, homesickness—a real illness among exiled islanders—had already taken most of them "west" long before any question of an eastward journey could arise. I may digress for a moment from my tale of this particular island to say that my guess as to its evil character became fairly certainly substantiated a month or so later. Lizard Island, our headquarters, was twelve miles northward of this islet of ours; and a few miles to the northward again of Lizard Island was "Cook's Passage," a safe and excellent gangway through the Barrier to the open sea.

On many Sundays we had landed on Lizard Island, had climbed all over its fine 1200-foot granite ridge, had shot over it, and had explored it (as we thought) everywhere, and bathed from every one of its beaches, yet never had we beheld mankind, nor any sign of his occupation. But one night, while the *Dart* laid there at anchor, a large beacon fire blazed up on an

ocean-facing point, and on the next night there were two fires. The following morning we saw in the offing a labour-brig. There was no mistaking her. She had come in by Cook's Passage, but instead of standing on, with full canvas, as she might have done, for our Barracoon Islet, as soon as she sighted the *Dart's* mast-heads lying off Lizard Island she hauled to the wind and stood out again. She had evidently grasped suddenly the full meaning of the warning beacon-fires she must have seen the night before, and connected them with the unexpected apparition of a man-of-war in that lonely waste of reefs and dangers, and made to sea again with every stitch of canvas that would stand. We never discovered the habitat of the mysterious watchman on Lizard Island who gave the beacon-fire warning, but he was evidently a permanent resident in some hidden part of it. The island is a large one, covered with bush, and we had plenty of other things to occupy us rather than searching for him.

To return again to our islet. Having established ourselves in the least dilapidated part of the empty barracoon, and landed our stores and coal and water supply for the steam-boat for the week of our sojourn, my self-instruction in the art of boat-sounding began. I arranged that the men of the boat's crew should take it

in turn, one by one, to stay behind on the island for the day while the boat was away at work. This was partly for a much-needed rest from the heavy work of incessantly heaving a 14 lb. lead during a day of sounding, and partly to look after the camp in our absence. After breakfast each morning, the camp-keeper for the day paddled us off in the skiff to the steam-boat lying at her anchor in the deeper water off the beach. Having seen us off, he returned, hauled the skiff up on the shore above high-water line, tidied up the camp, and spent a pleasant and highly-esteemed "day off." I left with him a gun and cartridges, for it was often possible to shoot something for "the pot." Groups of large black-and-white pigeons, in bands of ten or twelve birds, usually came flying over from the mainland in the afternoons, and paused for a breather on our trees. If they did, it was a last breath for one or more of their number. They were a bit tough, and it was a pity they did not choose a rather earlier hour for their visit each day, so that they might have got themselves more tender through a longer stewing; but, most selfishly, they did not as a rule consider this point. However, combined in the pot with sweet potatoes from our garden, with tomatoes, and with green pawpaws, not to speak of preserved

mutton from our stores, the general excellence of the resulting pot-mess was such that it vanished with remarkable speed when laid each evening before the hungry toilers of the deep. It was the job of the camp-keeper to prepare this repast, and to have it steamingly ready for us when we returned at sundown. It was his further duty, as soon as we were anchored, to come off at once in the skiff and convey us ashore to where the enamel plates and mugs and white-metal spoons were laid out ready for the meal that eager hearts expect after a long and arduous day's work.

On the last day of my week of sounding, it fell to the turn of Chapman, the coxswain of the boat, to have the day on shore in camp. One's coxswain is generally too valuable a person to spare for a "day off" from sounding work; nor does he really need one physically in the same way as the other men of the crew, as he takes no turn at heaving the lead, but works the tiller only.

All the same, a day of boat-sounding means a day of hard work for every one concerned in it. Before you start for the day, you rule on your field-board, upon which all the adjacent triangulated points are marked in their respective positions, a series of parallel straight lines over the area ordered to be sounded over, at

the distance between them ordered by the chief of the survey. The lines are ruled usually at right angles to the nearest shore line, and run from it out to the point at which deep water may be expected to be.

Your object is to take the boat along these lines, as nearly as you can, sounding continuously as you go along. As you steam (or pull) along them, in and out, in and out, you fix the boat's position by sextant angles of the triangulated points nearest to you, getting a "fix" at every third or fourth heave of the lead, writing down the soundings as they are called out by the leadsman, and the sextant angles as they are taken in your field-book.

Then immediately you plot on the field-board the position these angles indicate, and thus discover whether the boat was actually "on her line" or not when the "fix" was taken, and you alter the helm accordingly. It is the coxswain's job naturally to look after the steering of the boat. You give him two fixed objects on shore to keep in a line—"points to march on"—such as a rock on the beach in line with some conspicuous tree in the bush behind it.

These are known as "transit marks," and if your coxswain keeps the boat truly on them, and moves the helm so as to counteract the inevitable efforts of wind and tide to carry the

boat off them, all is well. If the coxswain really attends to his job unceasingly, as he should, he becomes the officer's right hand and left eye, while the said officer's left hand and right eye are battling with the tangent screw and telescope respectively of the sounding sextant, and while, at the same time, he is somehow subconsciously paying attention to the man sounding in the bows, and seeing that he is taking the depths properly and reporting them accurately.

On the other hand, if the coxswain forgets what his two "transit" objects on shore are, or puts his helm the wrong way, or sends his wits wandering, all is unwell—it is, indeed, damnable, and nothing less.

Chapman, never very bright, had been more than usually sulky and "fed up" during the first four days of the week. More and more gloomy had he become as the days went by, and more and more exasperating in his carelessness in allowing the boat to get off the given line, with the obvious result that all the soundings, when plotted, appeared in crooked rows instead of straight ones, and were not evenly spaced, as they should be. When Friday came I decided to land him for the day, and to steer the boat myself. Though it added considerably to my labours, it was a blessed relief to the

mind ; and I was so busy all day, and so successful with my self-steered lines of soundings, that I thought no more about Chapman, except at intervals to rejoice at his absence. This day's work, at least, should show the Skipper that I was beginning to learn how to do boat-sounding, even though the lines of soundings on the other days were "all anyhow" (as indeed they were, though this was hardly my fault).

When, at the end of the long, hot, windy day we rounded the point of the reef into the shelter and calm of our island home, we were all surprised to see no signs of life in the camp, nor was Chapman, as camp-keeper, there, waiting in the skiff, according to orders, to land the weary and hungry workers. The little steam-whistle was blown long and shrilly to attract Chapman's attention. We shouted, we cat-called, but there was no reply. Then we noticed that the skiff had disappeared ; she was not lying hauled up on the beach ; she had gone altogether. Just as I had made this painful and mystifying discovery, there was a sudden chorus from the men forward in the boat. "'Ullo, look at ole Chapman ! There 'e is, sir, layin' down over there, asleep !" And still more vehement cat-calls went forth, reinforced by further blasts on the whistle.

By this time the steam-boat had reached the usual anchorage place, at about two hundred yards from the beach; but what had happened to the barracoon huts, which ought to have been visible from this point through a certain gap in the bushes that fringed the beach? Nothing was left of them but their blackened ruins, from which a few wisps of thin blue smoke could be seen ascending into the evening air. On the beach in front of them, lying on top of a sort of table-topped framework of cut boughs, which we had rigged up to be a place of deposit for our gear, clear of sand and wet, there, wrapped in a blanket, was Chapman, fast asleep.

We could get no stir out of him by shouting, and there was nothing for it but to anchor the steam-boat and to swim ashore. We all jumped in together, for there is safety in numbers if sharks should be about; and presently we were all standing, dripping, around the couch of the sleeping malefactor. When at last he was aroused, he seemed to be more sullen than ever, and quite unable to answer any questions as to the skiff, the burnt camp, or (worst of all) our supper. Then suddenly he burst into tears, crying like a baby, declaring that every hand was against him, and began to babble about two large birds which, he said, had been whoop-

ing over him and whispering to him all day, and didn't we remember them when they came over the hill the first night we landed? "There they are, look!" he sobbed, pointing skyward, with a look of terror, cowering his head under his other arm. But there was nothing in sight there but the quiet stars, now beginning to fall into their places, bright and early—the brightest earliest,—for their night watch. We all looked at one another with uplifted eyebrows. Evidently Chapman had gone off his chump.

It was, in truth, a pretty fix to be in there on that wild reef islet; but fortunately the poor wretch was only melancholy, and showed no symptoms of violence. Leaving Huxley, the leading stoker, to look after him, I set off with the other hands to search for the skiff. By the greatest luck we found her near the extreme point of the bay, just about to drift quietly away from the island altogether on the newly-starting ebb-tide, having been lifted by the recent high-water off the beach, where she had been hauled up in the morning. After an agitating swim together we caught her, and scrambling in over the stern, paddled back to the blackened site of our once comfortable camp, wet and most miserable. There was nothing to eat; there was not even tea to

drink, for the whole of our remaining provisions had been burnt up in the general conflagration, and so had our blankets, as well as our still unfolded tents, never before needed on account of the huts. Most serious of all, every box of matches had gone as well, except for a few which Huxley remembered to have put in his trouser pocket, so as to be handy for lighting up the steam-boat's furnace in the morning. The next flash of memory reminded him, and us, that he had just swum ashore in those self-same trousers. He pulled the soaked and disintegrating box out of his pocket, and sadly placed in a row five drowned little Bryants by the side of five defunct little Mays near the still warm ashes of the ruined camp, in the hope—alas! vain—that the heat might dry the matches back to usefulness. A day's provisions—"iron rations"—are always kept in every surveying boat for use on such an emergency as this. I sent to get them from the steam-boat, and also to bring ashore the stump of a precious candle in a lantern that was there, together with the boat's "firework box." This latter was a soldered-up tin box containing rockets, blue lights, and other means of making night signals, also intended for emergency use. The provisions consisted of a small quantity of preserved meat in tins, and ship's biscuits.

That was all ; but it was better than *nothing*, even though we were reluctantly obliged to leave half of it for the following morning. We should need it then for breakfast before starting back to the ship, which was at a distance that represented some hours of steaming in our slow little boat, towing the skiff. There remained but one thing more to add to our misfortunes, and it came—namely, the rain. The night, after a starry prelude, had slowly been clouding over ; the wind gradually dropped, and at midnight or thereabouts the rain began definitely to drop too. Our clothes had been completely soaked with salt water twice over, once in swimming ashore, and again when rescuing the drifting skiff. Wringing them out had produced not exactly dryness, but at least a damp approach to it, not unbearable in that climate, if unpleasant ; and the sleep of the just and of the weary had come to us, even on the thin couches of leaves which alone separated us from the hard ground. But now “ cold pig ” descended on us from the sky, drop after heavy drop ; there was no avoiding them ; the rain searched every corner of our wretched bivouac. Even the adjacent trees offered little or no protection, and merely collected the falling water in catchment areas overhead, from which to fall in larger drops on our defenceless bodies.

Further sleep was impossible. With the first grey of dawn began our attempts to make fire, for without fire there could be no steam in the steam-boat, and no return to the ship. Everything was by this time quite damp, though kindling wood, paper, and what remained of the matches had been defended from the pitiless rain so far as was possible. The moment had evidently arrived for putting into practice the advice drummed and drilled into the brain of every midshipman of those days as to how to act when away in an armed boat on active service when desirous of obtaining a light, the homely match-box, for some unknown reason, being entirely prohibited from a boat's equipment. The stereotyped reply, which had helped to pass many a sub-lieutenant in his *viva voce* exam., was, "I should fire a blank charge from a rifle into a piece of slow-match, placed near the muzzle." A moderately sheltered spot having been discovered under the dripping bushes, this ingenious method was put to the test. . . .

After three whole hours, having destroyed an entire field-day's supply of blank cartridge without any appreciable result upon the sulky slow-match, and having done things with the fireworks which in happier less desperate circumstances would have reduced all of us to

mere cinders, a detonator was at last induced to function on its accompanying blue light; and from this dangerous quickly burning torch the precious gift of fire was passed on to our equally precious bit of candle. This latter consisted of about four inches of a "pusser's dip," which we had cut into two pieces, so that while one sacred flame could be kept ashore in the camp, cherished from the malevolent forces of wind and rain, the other half of the dip, as lovingly cherished and shielded in a lantern, could be borne off to the steam-boat by Huxley for lighting up the furnace in her boiler. And then, but not till then, the rain stopped. Presently the shrill whistle announced the successful raising of steam. We gathered up whatever portable fragments remained to us of the poor charred camp, ate miserably the remainder of our cold unbreakfastlike "iron rations," and paddled off to the steam-boat just as the nine o'clock sun devoured the last of the rain-cloud, so that our departure at least was so far cheerful. Chapman, who had slept heavily through our night of wretchedness, sat quietly in the boat as we steamed back to the ship, with a countenance of the most extreme melancholy, relapsing into tears with the appearance of any sea-bird near or round the boat. When we got on board, and the tale of our adventures

and sufferings had been told, the doctor advised that he should be kept under observation only, but under no restraint, and as the day progressed he seemed to become more and more normal. But that night, at a little after 1 A.M., the Quartermaster on watch heard a heavy splash in the sea under the bows. It was an overpoweringly hot night; there had been a thunderstorm and a torrent of rain; a steaming heat drove all hands up on deck seeking for sleep. With the always heart-rending alarm "Man overboard," the quiet ship was immediately roused into thrilling life. Boats were lowered, lanterns flashed, men with ropes and lifebuoys bent over the low bulwarks, peering into the blackness beneath; some men jumped overboard, regardless of sharks, and were swimming about searching in every direction. It was poor Chapman who had disappeared so suddenly, as we soon found out when mustering the ship's company "round the capstan," as it was called, a duty which was carried out as soon as possible by flickering candle-light, the men in every sort of queer "rig," most of them in nothing but a "flannel."

Nothing was ever seen of the unfortunate man again. When daylight came, the boats were sent in all directions "dragging" for his body, searching with "water-glasses" the pure

white sandy bottom of the little bay off Lizard Island, where the ship lay at anchor.

All that was there to be seen was clearly visible through the translucent water: the anchor, and the curve of the attached cable up to the hawse-pipe, a few scattered lumps of dark coral-cruste stone, and at one place over which the ship had once lain at anchor were the mortal remains of poor old Tabbs, the ship's cat, who, luckless lady, had found her last batch of kittens too much for her, had died a few days previously, and been consigned shotted to a watery grave. She, at least, had not been touched by sharks, and, indeed, we never at any time saw sharks at Lizard Island, so that what became of the luckless Chapman was and remains a mystery. The Skipper read the burial service over the place of his escape from the "birds." He was marked as "DD" in the list of the ship's company, and there the matter stands.

## CHAPTER III.

## CORAL WATERS.

THE wise surveying skipper, who realises that his assistants are but men and not sounding machines, will arrange that those who do the depth-taking part of the work most efficiently shall not for that reason be employed on it and on nothing else. At the first sign of staleness—and, better still, earlier—he will put the “sounder” on to some other job, such as tidal observations, inland topography, astronomical work, coast-lining. There is a large field of choice in hydrographical surveying; indeed, each of these subjects (and there are several more) is itself not merely a “field,” but an estate of considerable acreage.

After a few weeks of sounding, therefore, not because I had become very competent at it—far otherwise,—but because it was time for me to begin on a new subject, I was put on to learn “coast-lining.” This means the accurate mapping of the high-water line around the

coasts of a survey, the boundary, as you may say, of Britannia's realm. It is performed by walking round the high-water line of the shore, following exactly its every turn and twist, small and great, and fixing its position on the new chart by means of sextant, theodolite, and several other instruments, where, later on, it will be indicated by means of appropriate symbols as to what part of it is rock, what gravel, what sand, what mud, and so forth. Even the colour of each must be noted, and the heights of off-lying rocks. It is really artistic work, full of dodges, and extremely interesting. If it is possible a small pulling boat accompanies you, as you proceed round the coast, carrying instruments and lunch, and assisting in fixing outlying rocks too deep to be reached by wading to them.

The tropical coast-line is strangely different from any to be found in the British Isles. In these cold lands the sea-fronts are for the most part bare of trees, and are wind-swept; but in hot-house latitudes, when heat is associated with a rank fertility of soil, the struggling jostling tangle of trees comes thrusting out twenty feet and more over the beach, each bough straining to be the outermost, so that its leaves may be first to suck in the light and the soft damp air coming in over the sea. At

high-water, the tidal edge lies far in under these green bowsprits, and at that time coast-lining is impossible beneath them ; so that, until the tide falls, one must find that rarity, an open piece of coast, on which to work.

At low water an almost greater difference from the English coast-line is seen. Every islet of the Queensland sea within the Barrier is set about with a girdle of flat reef, accreted to it even as tartar round a tooth. The shore-line near the high-water mark is usually surrounded by a band of coral sand of a whiteness that, in the blazing sunlight, causes first the eyes and then the whole head to ache distressingly, and you step gratefully from it to the stage below the sand, to the undazzling stretch of brown dead coral rock. This, which represents the gradual outward growth of the reef, is often a hundred yards wide, and is nearly flat. It is intersected with crevices and pools in which, left by the tide, are little darting fish of brilliant colours, and large cowry shells (generally the homes of hermit crabs) and black sea-cucumbers, disgusting to look at, and more disgusting to touch. Not a leaf of seaweed, as we know it, is anywhere to be seen. As you walk out towards the reef edge, the pools become deeper, and their sides are crusted with clumps of living coral ; and then suddenly

you find yourself on the verge of a steep slope, falling away into cool blue depths of fairyland. There can be nothing more beautiful or fanciful in the world. You look down through the pellucid water upon a dream-garden of the most exquisite branching sea-growths of unimaginable variety of forms, all lovely. They glow with colour in the flooding sunlight, not steadily, but in quick living palpitations, in vibrations of mauve and blue and carmine and golden brown, and a thousand soft shades besides, down, down into the purple mystery at the foot of the steep slope. You are regarding the front ranks of the coral army, marching ever outwards from the land on stepping-stones of its dead self to better things.

Through its wonderful branches, as if their own glowing colour was not sufficient for the greediest spectator, there move fishes of shapes and tints surpassing all invention, ever changing, ever interweaving. In their setting they are like the creatures of some brilliantly illuminated ancient manuscript.

When tramping along the beach, industriously coast-lining, it is difficult indeed to resist taking an occasional and quite unnecessary walk to the reef edge, when the tide is low, to look over it into the wonderland slope of the weather side.

To do so, however, requires not only strong boots, but also great circumspection. Some of the crevices in the surface of the dead reef are the hidden dwelling-places of giant clams, whose double shells often weigh as much as a hundredweight; you could easily give a baby a bath in one of them. One must suppose that these monsters began their existence, when no larger than cockles, in some vacancy among the coral branches at what was then the outer edge of the living reef. As the reef grew slowly seaward, *Tridacna gigas*—which is the monster's name—increased in size, and as he did so pushed away the softly encroaching coral buds, until by the time the living front of the reef had grown outward past his chosen home, he had moulded for himself a recess in the now hard coral rock, just wide enough to allow full play to his hungry jaws, and just deep enough for them to be exactly flush with the surface of the reef. Thus the huge creature lies completely hidden; and as you walk over the reef, a very careful look-out is most necessary. Each lip of the shell is deeply corrugated and sharply edged; when closed, the indentations fit closely into one another, and when open they lie five or six inches apart. If, as you walk, you look sufficiently closely, you can distinguish the mouths of these man-traps (though they are

intended to be fish-traps) by a wavy zig-zag line of dark green and red. The corrugations of the lips of the shell are thus traceable amongst the lighter browns and reds and greens of the reef, but are not at all clearly marked. Shortly before our arrival in the Queensland waters, H.M.S. *Amethyst* (of those days) was making a cruise through the Inner Route to the northward. Being at anchor one day, leave was given to any of the men who wished to do so to land on an adjacent reef-islet to bathe and collect shells or bits of coral for the back parlour at home. Several took advantage of this opportunity of getting some cheap "curios." The tide was rising, and was already about three feet deep, when one of the men, wading over the reef, not knowing of such a possibility, put his foot into the mouth of one of these giant clams. The heavy jaws, with their strong muscles, immediately closed like a rat-trap on his leg, just above the ankle; and there he was, a prisoner. His chums tugged, they tried to drag open the iron lips; it was of no avail, the clam was too strong for them. The tide rose steadily up and up the unfortunate man's body; it was as horrible as a "Tale of Mystery and Imagination." Some of the men rushed away to signal to the ship for a boat and for help. Assistance came, but it was barely in

time, for the tide had already risen to the man's shoulders.

The *Amethyst* was a west-country ship—that is to say, from Devonport, so that among her company shell-fish specialists were easily found who would know how to deal with even the largest cockle should it refuse to open its lips. They hurried to the rescue, bringing a long iron bar, which, being plunged deep into the interior economy of the great clam and vigorously stirred round, presently extinguished its power for ill, or for anything else. The giant muscles ceased to act, the jaws fell apart, and the man was rescued, badly lacerated by the sharp rough edges of the shell, but alive, and saved from the slow and terrible death which must otherwise have been his fate.

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The fringe of coral around the land is not invariably continuous. There are in some places wide breaks, indentations that run right up to the sandy shore, either in the form of a bay in the reef, or as a narrow gully, and often end in a pleasant cove of fine white coral sand, with, perhaps, a space behind it of short wiry grass, backed by trees. Such spots are, no doubt, arranged by the kind Providence that looks after the dinner-hours of hydrographic surveyors in the field in order that they may take their



SURVEYING PARTY'S DINNER-HOUR ASHORE.



pleasure therein during the hottest time of the tropic day. And such a cove I have in mind, which, on a certain day of coast-lining, I had directed my attendant boat to make for, while I and my assistant carriers of instruments tramped round the coral-fronted beaches of the island. In the middle of the cove, growing abruptly out of the white sandy bottom, there was a large clump of brilliantly glowing corals, with their attendant fairy fish. The boat's anchor had been cast out close to this clump, so that her stern, when she swung to the wind, floated just clear of the beach. When dinner-time came in the middle of the day, we of the shore tramping party waded out and flung ourselves into the boat, which was a five-oared "whaler."

There, under the grateful shade of the awning, all hands fell-to enormously on preserved mutton, pickles (lots of pickles; you feel the need of them when there are no vegetables to be had, and half a bottle was a man's ordinary ration), ship's biscuit, and coffee—the regulation "surveying lunch." While this was proceeding, the bowman of the boat, looking over the side into the marvellous sea-garden below, was romantically inspired to collect a nice bit o' coral for the old woman's mantelpiece at 'ome (with glass shade and wool-work mat complete). There-

with, he hooked up with the boat-hook a few of the best growing branches, depositing them in the bow-locker of the boat. It was against "ship orders" to collect coral; but neither the coxswain nor any of the crew saw what had happened, as all were facing aft at the moment, on their thwarts, at their meal. I, though I was facing forward from my seat in the stern, and saw all, said nothing, well knowing what the result would be. For coral, exquisite both in shape and colour when alive, growing in the tepid water, as soon as it reaches the upper air and the burning sun, begins instantly to fade; and, thus expiring, the coral "insects" become a foul and glutinous mass of a dirty brown colour, which drips heavily off its supporting branchy skeleton, smelling so evilly that the ship order above-mentioned had to be made.

The sun was pouring down, and penetrating the criss-cross of the grating that covered the bow-locker, which lay outside the spread of the awning, it struck on the coral concealed beneath. The coral was already in an advanced stage of dissolution, and the additional heat thus supplied considerably strengthened the odour of death that had begun to pervade the surrounding air. There was a gentle head wind, and presently the faint "dead seaweed" smell,

which the boat's crew had probably noticed, slightly wondering, perhaps, at its origin, became, first, "dead fish," and then "decayed fish," and finally "putrid fish," with increasing vehemence and speed. In about five minutes it had become almost beyond endurance. Still, following an immortal precedent, I lay low. Then from the aftermost thwarts of the boat there arose indignant sniffs of the loudest and longest nature. "Ph-ph-phew" came from each of them, where the men sat at their half-finished dinner, and all turned forward towards the now obvious source of the stench—this horrid word alone describes what the odour of the mantelpiece ornament had by this time become. Then, in a hoarse whisper, not intended (or was it?) for my ear, from the coxswain, sitting on the after thwart, "'Ere, what th' 'ell 'a' ye got forward there. Go on, 'eave it overboard at once. Ye'll poison th' 'ole bloody lot of us! Ph-ph-ph-phew!" And expostulations of an equal vigour went forward, thwart by thwart, in terms which, while the other parts of speech may have been varied, there was but one adjective. If not always strictly applicable, it yet appeared to express the general emotion. Then did the bowman, himself the heaviest sufferer, sitting, as he was, on the very source of the poison-gas, pull up his grating, gingerly lift out

the now foul and dripping branch, and cast it into its watery birthplace, now to become its grave. Never again was there any attempt at collecting coral, no matter what its beauty or suitability for parlour ornamentation.

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The need for a re-survey of the Inner Route off the Queensland coast was rendered distressingly evident by the loss of the passenger steamer *Quetta*, which took place while we actually were engaged on surveying the waters but a few miles southward of the place where she was wrecked in Adolphus Channel.

Judging by the chart of this channel, there was no indication that shoal water would be encountered anywhere in the vicinity. The *Quetta* was following what had hitherto been considered to be a safe deep-water route, one that had been used by thousands of vessels before her. No ship navigating a tidal channel keeps an exactly precise course, no matter what care is taken, and it was little short of a miracle that no previous ship had been taken just those few yards—it was no more—northward of the track recommended on the chart, along which the depths were sixty feet and over. Had one done so, she would have been impaled, as was the unfortunate *Quetta*, on a rocky pinnacle, whose top, hidden only twelve feet

below the surface, projected upwards from the sea bottom like a spike. The ship was going full speed quite unconcernedly at the time, so that when she struck, an enormous hole was ripped in her bottom plates. Filling rapidly, her momentum carried her some hundreds of yards farther to the northward along her track, and there she sank, as if torpedoed, in eleven fathoms of water. As for the passengers, most of them were drowned, but some got away in boats. There was no "wireless," and it was nearly two days before help arrived at that remote spot. A few persons, including some women, were picked up, having drifted about, supported on wreckage, for more than forty hours. They were just alive, but were all in a state of the most utter exhaustion, having been foodless and waterless; defenceless from the blazing merciless sun above, and from the equally merciless sharks in the sea beneath. H.M.S. *Paluma* was engaged, with the *Dart*, in the re-survey of the Inner Route; and we were both despatched at once from our regular work to search out and fix the position of the *Quetta* rock, so that the maritime world could without delay be warned and informed about it, and the newly discovered danger charted at once.

While the two ships were there thus engaged,

a small schooner came sailing in from the eastward. She was loaded with "shell"—that is to say, with the pearl-oyster shells of those waters, which are several times as large as those that inhabit the chilly beds of Colchester. "Shelling" is one of the chief businesses of the Queensland coast to the northward, and it is a valuable one, for from this shell "mother-o'-pearl" studs and buttons and such matters are made. There are several well-established shelling grounds off Cape York, the northernmost point of Queensland, but in the scarcely surveyed Coral Sea to the eastward and southward lie reefs and shoals that are also "shelling" grounds, some of which are shown on the charts, and some not. The secret of these grounds is jealously guarded by the lucky discoverers. They are, of course, No Man's Land, or rather, No Man's Reefs. Beyond their latitude and longitude there is little to indicate their position. All that is to be seen, in most cases, is a green turbulence of the water when the tide is high, and at low tide, perhaps, a few white mounds of sand resting on the crest of a foaming reefy ridge, with the sea-birds wheeling and screaming over them.

The reef usually surrounds and encloses a space of shallow water, as a fence surrounds a field. Within the fence, the depths of the

enclosed lagoon may be no more than from twenty to thirty feet ; but immediately outside it, below the top belt of living coral, the submerged slope falls sharply from twenty fathoms to two hundred fathoms, and then with amazing suddenness to two thousand fathoms—the ocean's floor. Pearl oysters are found at the bottom of some, but not of all of these reef-lagoons, and the schooner we had sighted had come in with a cargo from one of these ocean atolls, her own secret and special preserve. She brought, at first hand, a strange tale of the sea.

Not long before, her Skipper told us, he had been booming westward before the wind in another schooner, with a full hold, and every stitch stretched. The south-east Trade wind, usually of moderate force, gradually worked itself up, as occasionally happens, into the condition of a south-east gale, and before it the schooner flew still faster, with a following sea of roaring white-topped waves. There was some cause for anxiety, but she was a good vessel, well steered. She was making splendid running on the direct homeward track, and with proper care at the helm, they knew they would pull through successfully, even though, owing to the cloud-covered sky that accompanies these wild bursts of the "Trade," they had not had sights for some days, and so only roughly knew

their whereabouts in the Coral Sea. Suddenly they made out, a couple of miles ahead of them, green water piling up, and breaking in towering spouts of foam, the sure sign of the weather edge of a reef. The sight was truly alarming, for it was impossible to haul to the wind to clear the danger, and equally impossible to gybe to clear it on the other tack, as the wind was far too strong and the sea too high for any such manœuvre. All they could hope for was to discover a gap in the reef ahead of them, through which perchance they might pass. Presently even this hope was snatched from them, for, as they flew towards it, and could see better, they realised that the foaming wall of reef in front of them stretched right across their track from one extreme of visibility on their horizon to starboard over to the other extreme to port, and that there was not the smallest sign of a gap in its impregnable line.

There was nothing for it but to keep the flying schooner straight at it, in the forlorn hope that some extra big wave might so time itself as to carry her over the barrier, clear of the coral ridge beneath. So they set their teeth, and held the schooner's head as directly as they were able towards a point, luckily nearly ahead of them, where the green water was not breaking in quite so towering a head of foam as else-

where. Fortune favours the bold. As the little ship neared the reef, an enormous mound of water roared up behind her, lifted her on its white-streaked back, and carried her, body and bones, "over the top," and into the pale green shallows of the lagoon on the lee side; not, indeed, without shipping a good deal of water in transit, but at least safe, and unscratched as to the bottom timbers. The sails were quickly dowsed, the anchor let go, the cable veered as far as it would go with safety, and there was the schooner gallantly riding the tumbling seas coming at her from all points round the basin, yet chastened in character through their impact with the exterior wall of the reef, while the howling wind still steadily blew. Evening was falling, and, as often happens, the wind began to fall too. By morning the gale had blown itself out, and after a few wet squalls, the real south-east Trade, steady and moderate, resumed possession of its kingdom. The sea subsided simultaneously, and the schooner's crew manned their boat and set forth to explore the lagoon into which they had so wonderfully been carried, in order to seek in the surrounding wall of reef for a gap to leeward by which they might escape to continue their homeward voyage. None could be found. The reef-barrier, though nowhere showing above water, was quite con-

tinuous. There were a few slight depressions, but not any navigable passage in its whole circuit. Their only chance of getting out lay in jettisoning the cargo of shell in the lagoon, so that the ship might be lightened sufficiently to permit her to float over the crest of the reef when the tide was at its highest point. The shell was sewn up in sacks accordingly, and lowered over the side to the bottom of the lagoon, to a depth of about five fathoms, alongside of the schooner as she laid at anchor, and the position of the *câche* was marked by a buoy, moored with a good buoy-rope and anchor. Then, having found the geographical position as accurately as they were able by sextant "sights" of sun and stars, they made sail once more, and, with their now reduced draught, managed to scrape over the reef-top to leeward at a moment of high-water, and reached Queensland in a few days' time.

On hearing their story, the owner of the schooner fitted out another schooner with a lighter draught belonging to his fleet, and sent her out, with an experienced diver on board, to the reef where the shell lay on the lagoon bottom, in order to recover the precious cargo in as many trips as should be necessary. She reached the reef, crossed it without difficulty, found the mark-buoy still in position,

anchored, and sent down the diver to begin operations.

Some minutes went by without any signal, and then he reappeared at the surface, climbed the diving ladder, and made signs for the glass door on the front of his helmet to be unscrewed. He reported that the sacks of shell were there safely enough, but that they were lying on the top of a large mound, heaped up above the flat floor of the lagoon—a mound entirely composed, so far as he could see, of silver coins! And so saying (this “Arabian Nights” style seems the only one appropriate to the occasion), he drew from the pocket of his diver’s apron a small pile of dollars, all stuck together by coral concretion, but easily separable into individual coins! There were many thousands of dollars in that heap beneath the bags of pearl shell, and several journeys had to be made before all were retrieved. That the shell should thus have been jettisoned on top of a heap of forgotten treasure was a chance as slight as is the winning of the “Calcutta Sweep.” It was one in many millions. Consider it. The part of the Coral Sea where the pearl shell is found covers an area of, perhaps, 4000 square miles. The reef-lagoon where the treasure lay had the same relation in area to that of the Coral Sea as, say, Hyde Park has to the whole

of England. The treasure heap itself had the same relation in area to that of the reef-lagoon as, perhaps, the mound of the Achilles statue has to that of Hyde Park. Then imagine an aeroplane, storm-driven from the Continent, accidentally dropping a message exactly on Achilles' outstretched sword! To ask any one to believe the possibility of this equivalent chance shot by a storm-driven schooner in the Coral Sea seems to demand a credulity that the most Royal Marine-like hearer of tales of the sea could scarcely provide. The story is, however, perfectly true. I have myself handled a small pile of about ten of the dollars, easily recognisable as such, though glued together by coral into a solid lump. How did they get into that reef-lagoon?

Their origin has never been certainly decided, but the following conjecture has been made. In the early days of the nineteenth century, the currency used in the colony of Botany Bay—that by which the troops and prison-warders and other Government officials were paid—was Spanish "pillar" dollars of the same minting as those found in the reef-lagoon. They were so named from the two pillars (of Hercules "plus ultra") which support the coat of arms of Spain stamped on the obverse of the coin. There was a shortage of coinage in England in

those times of war (an experience that we not so long ago shared), so that it was found cheaper to import to New Holland supplies of silver coins from what was then the nearest civilised point—namely, the Spanish colony of the Philippine Islands.

Hence “pillar” dollars. They were, then, not “tokens,” but represented their value in silver, in the same way that a sovereign represents its value in gold.

Old records of the colony of Botany Bay show that several ships bringing supplies of this currency had been lost on the voyage from the Philippines without leaving any trace of how they came by their end, and thus it can fairly confidently be supposed that the heap of dollars found by the shelling schooner was all that remained of one of these unfortunates. We may imagine that she found herself suddenly up against the weather face of the unknown reef in the same manner as our schooner, and had been unable either to clear it or to leap the coral fence, but had been wrecked and then cast by the enormous waves bodily over the reef into the lagoon. Then she had broken up, leaving behind her the only solid part of her cargo, the dollars, locked up, no doubt, in the specie room, but now long since released from their wooden prison by sea-worms and teredoes.

What of her crew ? The nearest inhabited land to the reef where the dollars were found was an island at the entrance of the Torres Strait that divides Australia from Papua. Inquiries were made there among the oldest natives as to any memory of the survivors of such a catastrophe. One very old man was found who could recollect that when "me pickninny boy," a boatload of white people, very hungry and thirsty no doubt, had landed, coming in from the sea to the eastward. But the cheerful islanders were hungrier still. All of the visitors were clubbed instantly on landing, and "alto-gidder man b'long my placee kaikai plenty b'long him," which is beach-la-mar English for the description of the ensuing dinner-party.

. . . . .  
January saw us on our way back to Sydney. The hydrographic surveyor's life, in whatever region of the earth he is at work, is necessarily divided into two parts—namely, part one, the field ; and part two, the office. The first part, which is also the longest, occupies the time when he is out in the open, taking soundings, and making the necessary observations on shore for triangulation, coast-line, tides, astronomical position, and so forth. The second part is the room on shore in which all the field-work (already plotted) is draughted, and brought

together, neatly and concisely, into "The Fair Sheet."

In almost every part of the world, tropics or otherwise, there is a good season for weather and a bad season, and the hydrographer arranges his work accordingly. By January the bad weather season of that part of Queensland was approaching, and we fled southward from it for our "lie-up time." As regards heat, it was the proverbial step from the frying-pan into the fire, for there can be very few hotter places than Sydney in midsummer. On the other hand, it possesses many compensating amenities, such as a comfortable harbour and a friendly buoy to which a ship may be secured without any of those anxieties as to "dragging" so constant on the surveying ground, where often one has to anchor in quite unsheltered water. There was leave on shore for "all hands," and as regards the Fair Sheet, instead of a poky chart-room on board, there was for its draughting "the Office"—a comfortable spacious room on shore, with large tables, plenty of light, and escape from ship noises, and a thousand ship worries.

The time "in the field" was full of joys and interests, but even to the keenest surveyor there comes a moment when the blessings of the land (to be obtained by the fruits of his labours, as

indicated daily in the ship prayers) seem to him immensely desirable. So at Sydney we settled ourselves down for a happy four months of "lie-up," men, officers, and the old ship herself, all much in need of a thorough refit after many months of battering about in all weathers.

The draughting of a Fair Sheet is a work that almost any one can learn to accomplish. It is a mere exercise of carefulness. No artistic qualifications are necessary, or almost none; they are even undesirable. The naked truth, even if, artistically speaking, it is the ugly truth, is what has to be set down. Imagination in chart-drawing is not to be encouraged. Beauty has been known before now to launch a thousand ships, but imagination will wreck them, and thus defeat the very object of the chart.

A finished Fair Sheet is quite an interesting sight, with the land and the reefs and the shoals each painted in its appropriate tint, and with all the little figures which represent sounding depths set down in their imposing battalions of thousands, line upon line. Then in some clear space is put the "heading," setting forth the title of the chart and the names of those who assisted to make it and other information, all done in more or less fancy types of printing.

When it is completed—not only the main Fair Sheet of the whole survey, but also the supplementary sheets of harbours and anchorages occurring in the area,—then there is given a tea-party at the office, to which are bidden all the best girls who have behaved themselves sufficiently nicely during the “lie-up” time of the ship; and they are permitted to gaze, magnifying glass in hand, at all this exhibition of patience, neatness, and carefulness.

They have even been known to admire the exhibitors of the virtues thus displayed; and if the admiration has occasionally become mutual, and has wandered into romance . . . but I digress.

All the same, the numbers of Australian wives in the Hydrographic Department that were collected while our ships were at work in those waters show that the dangers of the surveyor's life do not end with the surveying ground, but follow him into the very office. One does not want to discourage young officers from becoming hydrographers, but they should be informed beforehand that there seems to be no escape, afloat or ashore, from risks of the most serious character.

## CHAPTER IV.

## OFF TO THE ISLANDS.

THE *Dart* was under orders for the New Hebrides Islands for our next season's surveying work, and we left Sydney towards the end of May, with orders to call first at Norfolk Island, and then at Noumea, the capital of the French island of New Caledonia, before making across to the new and immensely interesting surveying ground to the north-eastward, where we were to spend several months before returning to civilisation.

Our first point, Norfolk Island, lies at about nine hundred miles to the E.N.E. of Sydney, in the pleasant latitude of  $29^{\circ}$  S., neither too hot nor too cold. It is a beautiful spot. There are about thirteen square miles of undulating park land, surrounded by low salmon-coloured cliffs with their feet in the blue sea, and its surface is varied by groves of pine-trees, of a kind indigenous to the island, while every gully is feathered with large tree-ferns.

All the really nice fruits of the earth grow there as if they enjoyed doing so, and require none of the cockering necessary in less favoured climates and soils. Norfolk Island was evidently intended to be a heaven upon earth, but it began its existence, so far as humanity is concerned, as hell. That was about a hundred years ago, in 1826, when it became a penal settlement. Those were the days of transportation, sometimes for quite trivial offences, from England to Botany Bay in Australia. After a preliminary period of observation, a sifting process began. The bad hats of Botany Bay, such as refused to be reshaped under the treatment there, were passed on to Port Arthur, in the south end of Tasmania, there to be "blocked," as hats must be. The disciplinary methods of Port Arthur were such that a good number of the poor bad hats sank beneath them, and, still unshaped, thankfully took a further short voyage to Dead Island in that romantic harbour, where they still remain. The cream of the remainder (or perhaps we should say the sediment) were sent on for still more drastic treatment to Port Macquarie on the west coast of Tasmania. But there was a still deeper depth of horror in the matter of prisons for the dregs of Port Macquarie, and this was established on Norfolk Island.

I have met a "Black Norfolker," and he proudly showed me his naked back, which had sustained so many floggings that from neck to waist it was ridged, and crossed and recrossed with weals and cicatrices, which thirty years of healing had not removed nor greatly reduced in size. It was a horrible sight. He was well over seventy, and still gloried in his wickednesses and his share in several murders of warders. He had once been reprieved, he told us, as he stood, with several other accomplices, with the actual noose round his neck. He was entirely shameless, and a more abandoned old ruffian or a more filthy-tongued does not, I hope, exist anywhere to-day. That was the result of "The System."

The ruins of the prison which he inhabited on Norfolk Island still remain, and so do those of the appallingly ingenious silent cell built outside the actual prison, whose densely thick walls and padded interior prevented the smallest exterior sound from reaching its prisoner, nor could any entreaty from within, though shrieked aloud, come forth, if even there were ears to hear it.

In the roof there was a cruel arrangement by which, while ventilation entered, not even the least shadow of light came to relieve the Stygian darkness. The inhuman isolation thus obtained

broke the spirit (temporarily) of the most recalcitrant occupant after less, usually, than forty-eight hours.

The prison is now partly pulled down, and houses for the present inhabitants of the island have been built from the stones of this wicked place. One would not care to live in any of them. Around every stone must cling the ghost of a human agony, the bitter undying memory of floggings, or an echo of the last defiant curse of the hanged. . . .

In 1856 the convicts were removed, and there was a new plantation of Norfolk Island by a company of about two hundred Pitcairners, the overflow of that strange and romantic race, half-British, half-Tahitian, which resulted from the mutiny of the *Bounty*. Their original island home could no longer support the numbers to which they had grown, and they were offered and accepted this new territory for expansion. Eleven years later a part of the little island was leased to the Melanesian Mission of the Church of England, which has built there a small and tidy village, with a beautiful chapel in its midst. To this spot chosen families of natives from the New Hebrides and Solomon Islands were brought to be educated in the peaceful arts of civilisation, such as husbandry, methods of health and cleanliness, and school

teaching of a simple sort, as well, of course, as religion. After a fitting period these embryo teachers were taken back to their villages in the mission parish, a thousand miles or so to the northward, in the hope that they would become each of them a small centre of decent living—a hope not infrequently fulfilled, as I have seen.

A pleasant ride up from the landing-place through the lovely glades and gardens of the island brought me to the mission station, which is placed on a small hill. Looking thence, I saw a procession of Melanesian students coming up the opposite side from that by which we had come. They had been having a practical lesson in agriculture, and the use of the white man's spade and garden fork. There had been rain, the red soil was sticky, and the men and their clothes were, all of them, of the earth earthy; but the earthiest of all was the instructor, only recognisable as a white man by his battered sun-helmet, and as a clergyman by the square notch at the neck of his ancient clerical waistcoat.

He greeted us without embarrassment, however, though with a good deal of surprise, as he had not heard of the arrival of our ship.

It was still quite early in the day, and as we were talking, the bell for morning prayer began

in the chapel close by. With a look of dismay he plunged into his house, and thence, by the sounds of furious splashing that reached us, obviously into his bath. One does not need much clothes in that delightful climate, but the rapidity with which the muddy field-labourer reappeared in the form of a surpliced parson, clean and spotless, made one wonder if a cassock cannot sometimes (quite canonically) take the place of a bath dressing-gown. On this occasion at least there cannot have been much in the way of clothes concealed beneath its enshrouding black.

Quite as remarkable was the equally rapid reappearance of the field pupils, who presently were marching in snowy procession into chapel, having become a choir. Their singing, and the playing of the organ by the head ploughman, could have given points to many a church choir at home.

Lunch at the hospitable house of one of the "Bountineers" was another thing to be remembered. These people, having never married outside their own clan, are all cousins in some degree. None is greater or less than the other, except that, following the ungallant Tahitian tradition, men take precedence of women. Accordingly, in the case of this lunch-party, the ladies cooked and the ladies served, while we,

the lords of creation, sat and ate in a large comfort. To us of another tradition it was all decidedly unpleasant and embarrassing. It was most difficult to reconcile oneself to seeing the lady you had "taken in," and with whom, perhaps, you were at the moment engaged in polite conversation, suddenly rise, seize your empty plate, carry it away to be refilled with roast chicken, bring it back, then set off again to offer for your superior male consideration potatoes, or admirably fried bananas, then at last, the desired consideration having been accorded, sitting down again beside you to resume the broken conversation.

. . . . .  
A strong and steady spell of the good south-east Trade wind swept us humming northward, with every stitch drawing, to New Caledonia. A narrow barrier of coral reef, like a wall, protects the whole coast of the island, and off Noumea, to which harbour we were bound, it lies at about ten miles from the land. There are several breaks in this sea-wall through which a ship may enter the lagoon it encloses, and we swung in through one of them named Bulari Pass, rounding the lighthouse on Amedée Island at this entrance in great style, and then speeding along through the smooth sparkling water, past coral patches innumerable, all clearly

visible in the sunlight, up to the entrance of the beautiful harbour of Noumea.

At the time of our visit the French convict transportation system was still in force, though now long since given up, and the grisly buildings on Ile Nu and on Presqu'île Ducos, facing the town, were full of the scum of France.

The geographical position of a certain point at Noumea was well established and connected with the observatory at Sydney, and our orders were to employ this point as a link to connect our future survey of the New Hebrides Islands with the rest of the world. The connection had to be made not merely in the cause of science, but for the sake of practical navigation. The making of it entailed what is known to the sailor as "Shore Sights"—namely, the landing of an observing party with sextants, sextant stands, artificial horizons, pocket chronometers, and much other paraphernalia, such as sun umbrellas and observing stools. It entailed also the finding of a quiet spot, where the tread of the passer-by should not agitate the too mercurial mercury of the artificial horizon.

An "artificial horizon" is a shallow iron dish, containing a pool of quicksilver protected from dust by a glass cover like a little roof. When a set of observations has begun, the slightest disturbance of this supersensitive mirror is

sufficient to ruin not only the observations but (still more) the temper of the sight-taker, and accordingly the madding crowd—the maddening crowd—must at all costs be avoided.

Casting our gaze round the harbour, we noticed a point a little to the northward of the town which seemed to be sufficiently remote, where there was a small pier at which the landing of our multifarious “gear” would be easy, and where we might hope to spend the necessary hours of observation without disturbance.

To this point, accordingly, we conveyed ourselves early the next morning. We had not long been settled down at our work and begun the sets of observations, when a low, a whining, and, more remarkable still, an English voice broke in on us from behind some bushes close by.

“Beg pardon, gennlemen”—the mercury gave a convulsive quiver, and that was the end of *that* set of “Equal Altitudes.” With curious (and furious) eyes we looked up, and there beheld, garbed in the most degradingly sloppy of sack-cloth garments, a French convict. “Beg pardon, gennlemen,” he began again in snivelling tones, “but could ye give a pore fella sumpin t’ eat? That’s all I gets to me dinner.” He unclosed a filthy hand, in which he had been clutching a small piece of goat’s flesh, embedded in mashed-up vegetables of lost

identity, together with a lump of what we should now call "war bread." We questioned him, and he told us that he had been serving as quartermaster in a French merchant ship, and had got into some serious trouble at Toulon, in which knives and murder had figured (he looked capable of anything of that sort), and he had eventually been transported to New Caledonia. His five years "hard" were nearly completed when an attempt he had made at escape from the harbour in an Australian schooner had been defeated by a failing wind, just as the vessel was clearing the harbour mouth. He was recaptured, and now had another five years to get through, to be followed by a similar length of time as a "*libéré*"—free in name only,—living under supervision in the island of New Caledonia, or in one of the New Hebrides Islands, as arranged.

We had no food for him, but he indicated a place where shillings might be concealed by us, which would do just as well. One wonders what was his end? In the prison buildings there was a grisly execution quadrangle, which we saw later on; an open square, in the centre of which there was erected a guillotine. The Messageries steamer came to Noumea every fortnight, and at practically every visit there came the official sanction from France for the

execution of one or more of these convict wretches. When this was to take place, two hundred of the worst of the still uncondemned were made to kneel round this square to be *encouragé* by the terrible object-lesson of those whose turn had come to set it. Judging by the stories we heard from residents of the town, the *encouragement* was of small avail. Murders of warders and of brother convicts, working in the mines and quarries, were as frequent as they were horrible; and they were almost as common among the *libérés* scattered through the island. No doubt it was the uselessness as much as the enormous expense of maintaining this establishment, and of sending the convicts so long a journey from France, that resulted in the closing down of the whole abominable system not long after our visit.

. . . . .  
The New Hebrides consist of about eighteen islands, great and small, strung out in the shape of the letter Y, four hundred miles long from north to south between the latitudes of 15° and 20° S. The islands diminish steadily in size from Espiritu Santo, the northernmost, which is ninety miles long, to Aneityum, the southernmost, which is only ten miles from one side to the other. Captain Cook, who discovered the group, was evidently hard up for

nomenclature at the time, for anything less like Scotland or the Hebrides (even if beheld in dreams) than these brilliantly wooded tropical volcanoes, active and passive, can scarcely be imagined. The male inhabitants do not even wear kilts to account for the name; the aboriginal costumes are, indeed, of an indecency quite indescribable. Search for information concerning the New Hebrideans in the 'South Pacific Pilot,' the official Admiralty Directory of these latitudes, produced but a single unpromising statement, "The natives are dangerous cannibals." It looked as if we surveyors, who were destined to spend the next five or six months in these wild parts, were in for an exciting time. It must, however, at once be said that the New Hebrideans that we encountered did not at all live up to this formidable description of them. At the time of our survey, the natives of the islands of the southern part of the group had almost all become Christian, and it was only the natives of the larger islands to the northward that still were largely heathen and to any degree cannibal. Our work was in the central part, so that we saw a little of both stages in their history.

On our way to Efate, in the middle of the group, where our survey was to begin, we paid a passing visit to Tanna Island, near the southern

end, and anchored at Wea Sisi, off the Presbyterian Mission station. We landed there, and, accompanied by Mr Grey, the missionary in charge, made an expedition to a rather famous volcano situated in the middle of the island, not far from the Mission. It is constantly and fiercely active, and though only about 1000 feet high, has one of the largest craters known in an active volcano.

From the landing-place we followed a winding bush-track for about a couple of hours, until the trees suddenly ceased, and we saw before us the solemn bare cone of grey ashes, its top feathered with smoke, thrust up like a stark island out of the tossing green sea of forest that surrounds it on all sides. There is no hesitation.

You emerge from the darkly shaded bush-track, and before you, unseen till then, are the smooth slopes of the volcano, the two sides as straight and unwavering as those of a triangle in geometry, leading to a neatly truncated apex, the whole figure silhouetted firm and black against the blue sky.

As you step forward, one stride takes you into the desert from the sown; your left foot rests in green fertility, and your advancing right falls on a black area of volcanic grit, fine almost as sand. It is a fairly easy walk up the ashy slope to the lip of the crater. Looking

down thence about three hundred feet into its heart, you can distinguish two separate pits of fire, and in each pit a dozen mouths of hell flaming and sputtering viciously. Within each of them hard rock was being converted before our eyes into a seething fluid, red hot, and white hot, and pale lightning blue, while out of the process there arose thick bubbles that burst and belched choking sulphurous white smoke up to our level. It seemed as if a time machine had carried us back to the beginning of earthly things, and that we were watching the very processes of geology. Every now and again there would be a loud gurgle of fire and fury, and out of one of the chaldrons a semi-molten slab of lava would be chucked up a hundred feet into the air above the crater-lip, dripping solid red drops as it turned end over end, and would then fall back into the fiery pits beneath. Occasionally such upheavals fall outside, but fortunately for us this did not happen while we stood there regarding the scene. The missionary told us that, only a short time before our visit, Professor Drummond ('Natural Law in the Spiritual World'), then on his travels through Oceania, had been standing on the edge of the crater, just where we were standing, watching the hell-kitchen tossing up its lava pancakes, just as we were

watching it. The professor had barely started to go down the hill when a large piece of semi-molten slag, newly thrown up, fell on his very footmarks on the soft ashes, where, only a few instants before, he had been standing looking down. With this encouraging tale to speed us we set forth at record pace, plunging swiftly down the soft ashy slope, sinking at each planting of the foot nearly to the knee, and bringing tons of the hillside down with us. We still hurried on reaching the firmer ash of the black plain surrounding the scene, skirting the dismal lake that lies along one side of it, until we reached the green security of the bush track, and were beyond the scope of so chancy a danger. It was on the tramp back to the anchorage that we heard from Mr Grey about "Narak," the Tanna method of revenge by witchcraft. It is (or perhaps we now should say it was) as follows. We will suppose that A. has got the better of B. in some matter of coco-nuts perhaps, or women, or yams, and that B., accordingly, wishes to get a bit of his own back. In as guileless a manner as possible B. will get into the close company of A., and then will rub against his naked body a banana skin, a piece of calico, or some equally Narak-absorbent material. Or, best of all for B.'s purpose (though difficult indeed to accomplish), would

be to obtain some article that A. had handled, some rag of bark-cloth that he had had round his waist, the skin of some fruit that he had eaten, no matter what, but the longer and closer its intimacy with A. the better. This is called "taking his Narak." But having taken it, B. must now be careful. For if, bearing the Narak-infected article he should cross over running water, all is lost. The infection of Narak at once passes out of it, and if he still desires revenge, another specimen must be acquired. A taker of another person's Narak will go miles out of his way through the bush to avoid crossing a stream.

This danger, however, being eluded, B. then makes his way to a "Narak Burner." There are sufficient numbers of these men-witches in Tanna to supply what seems to be an important want in the social life of the island. The office is hereditary, but the power exists not merely by virtue of birth so much as by the secret possession of a set of Narak-stones, buried in the ground in some spot known only to the owner. Mr Grey told us that a set of these potent stones, whose existence had evidently been forgotten, had been dug up accidentally in the Mission garden, to the enormous alarm of the gardener, who at once recognised them for what they truly were—the very instruments

of the Black Art. All of the stones had, or were supposed to have, a resemblance to some portion of the human body—a hand, a leg, a head, &c., a resemblance quite fortuitous, for they were not shaped by human hand, and two of the stones were known as the “Father” and “Mother” of the remainder. Until they were safely landed in the museum at Sydney the missionary had no peace from his neighbours, who all wished to get hold of them.

When B. arrives at the house of the Narak Burner, he arranges (always secretly) for the burning of A.’s Narak. It is largely or entirely a matter of sufficient payment. When terms have been arranged, the witch goes outside his house and collects a bundle of the leafy branches of a certain tree proper for the work before him. A long cigar-shaped bundle is made of the twigs and leaves, in the centre of which is placed the infected article, the Narak of A. The witch then makes a fire over or near the hidden spot where the set of Narak-stones is buried, and, with proper incantations, the Narak cigar is made to smoulder away slowly in the flame. As its first smoke goes up A. begins to sicken, and then his body to burn with fever. As the fire eats farther and farther through the Narak-impregnated bundle, so does the fever seize and flame within A.’s wicked

vitals, and if he repents not, nor makes restitution to B., the last smoke of the witch's fire will carry forth his miserable soul, shrieking, into the wild western edges of the island—the place of the dead.

So much for a severe case, severely carried through. But there are possibilities of countering the enemy who has "taken your Narak." Directly you are seized with fever, you cast round at once to find out not only who has taken your Narak (your guilty conscience may possibly inform you), but, more important still, which of the many Narak witches is burning it. It seems not to be difficult to make these discoveries, and even if a friend cannot assist you, the information can often be purchased. Knowing your witch, you approach him with what the bluejackets call "a straight arm," extending a hand containing a reward for taking the Narak out of the fire, which shall be greater than that paid for putting it in. There generally is time for such negotiations. Narak-burning is intentionally a slow process, so as to give the longer and the greater torment to the victim. Also, from the witch's point of view, one can see that it is advantageous not to be in too great a hurry, so as to allow time for the greatness of his sufferings to stimulate in the victim a correspondingly great bribe to the witch

for their cessation. So soon as the Narak is removed from the fire recovery begins, but if it is left to burn to the bitter end, there is no hope for him.

Now, one may be prepared to scoff at all this, and to say, as many have said with truth, that the engrained belief in the powers of Narak engenders the sickness, and that a man suddenly taken ill with a fever immediately ascribes it to Narak, and then, with the well-known facility of savage races to die at will, deciding that he is doomed, straightway biologises himself to death. That may be true, or anyway part of the truth. On the other hand, there was living in Tanna at the time of our visit a white man, a trader with the natives in calico, bush-knives, beads, &c., in exchange for copra and other island produce. He was a man of birth and education, had been (he said) a major in the Indian Army, and had come to Tanna because the climate suited him, and—well, it is impolite in the islands to inquire too narrowly into the reasons why one is *there* as a trader. What I wish to make clear is that he was a hard-headed white man of education, wholly unlikely to be affected by anything so fantastic and medieval as witchcraft. Yet on more than one occasion when he had suddenly been seized with fever, and had been informed by his native

friends, of whom he had many, who it was that had taken his Narak, and who was burning it, he had, at their earnest solicitation, followed the matter up, had paid to have the Narak taken out of the fire, and on each occasion had forthwith recovered.

The missionary who told us this assured us that he had no choice but to accept Narak as a disagreeable fact. Too many authentic cases of its occurrence had come before him to permit of the continuance in his mind of the contemptuous disbelief in its existence with which he had begun his ministrations in the island, and the only way in which he could prevent his (then very few) Christian followers from practising it was by pointing out the wickedness of revenge, and by preaching the difficult doctrine of forgiveness. Almost the strangest thing about Narak is its similarity with the well-known methods of Scottish witchcraft (nor is it limited to Scotland) of melting a waxen figure of an enemy, stuck full of pins, before a fire, in order to bring about his sickness and a miserable death. "Say, have you melted your waxen man, Sister Helen?" Here at least is a single justification for comparing the old Hebrides of Scotland with the New Hebrides of Oceania.

## CHAPTER V.

## IN EFATE, NEW HEBRIDES.

THE island of Efate, which lies rather more than one hundred miles to the northward of Tanna, was where our chart-making proper was ordered to begin. The outline of the island is a rough oblong about twenty-five miles from north to south, and twenty miles across. The northern part is mountainous, culminating in heights of about two thousand feet, without any very marked summit, while the southern part slopes from these mountains more or less gently to the sea coast. The island is everywhere covered with thick tropical bush. There are two good harbours. One is off the north-west side of the island, a large and well-sheltered anchorage, named Havannah Harbour after an exploring British frigate of that name in years gone by. This is the principal harbour, and on its southern shore is the head Mission station (Presbyterian). Southward of this, at about a distance of ten miles, there is a deep indentation in the west





SURVEYING BOAT LANDING AT MELI BAY, EFATE.

coast named Meli Bay, and at the southern end of this bay is a small and nearly land-locked anchorage called Fila Harbour, where the French interests in the island are centred. The whole of the eastern side of Efate and most of the south consists of an iron-bound stretch of rough coral rock, on which the swell breaks incessantly. It faces the ever-blowing south-east wind, and the trees along the coast lean inward to the north-westward, with their branches combed out in the same direction by the tireless fingers of the Trade. A dreary coast, scarcely inhabited, and entirely without an anchorage. The central mountains, wild and tattered, are the remains of bygone volcanic activity. On one of the summits we found a piece of ancient coral, which had evidently been brought up from sea-level in some huge upheaval of the past when the island took its present form. This was afterwards found to be the highest level (about 1800 feet) at which coral had up to then been found. The mountain-sides are densely wooded, with here and there large patches of strong cane-like grasses, six feet above one's head, which the pioneer travelling up the steep slopes to the summits above will do well to avoid, and to accept the lesser but still formidable difficulties of the jungle. White men have attempted to establish

themselves on Efate at various times during the past fifty years, or since longer still, with varying success, and from their farmyards there have escaped into the high bush behind the coast and up into the hills couples, as from Noah's Ark, of every beast of the field and fowl of the air that these settlers had brought with them for their sustenance. Cattle (known to the native as "bullamacow"), pigs, goats, cocks and hens ("kokoráko"), ducks, and guinea-fowl have here reverted to their original types, and instead of leading an inert farmyard existence, brooding perhaps on the tragic and inevitable end thereof, live here a happy life of love and its wars, unhunted, unbeaten, uneaten by man, seeking and obtaining their meat from God.

Perhaps there may also be in these hills a Robinson Crusoe or so, but we never met one on our journeys into the interior in search of theodolite angles for the survey.

At one place near the coast not far from Fila we saw the remains of a white settlement of romantic origin, the bush-clearing for which was now in process of swift obliteration by the returning tide of the jungle. It appears that one of the present-day representatives of the family of Captain Cook is a Frenchman. Cook had six children born in England between

1762 and 1776, so there may now be living many of his descendants, both in the male and female lines, English and otherwise. This French one was, like his ancestor, a person of energy, resource, and imagination, and in his great-grandfather's honour he decided to found a Cook Colony in this island of Efate, which had been discovered by the great navigator in July 1774. With this end in view he collected a large party of men, women, and children from the peasantry of his native France, all as ignorant as himself of the difficulties to be encountered, but sure that their enthusiasm would overcome them. Permission was received from the French Government for the attempt to be made (the New Hebrides are under a condominium of England and France), and a sufficient area of land was purchased—so the arrangement was described—from the alleged native owners of that part of the island, on which the colony might clear the bush, build houses, make gardens, and settle. Houses, tools, and a supply of European food with which to start them were provided; no detail seems to have been omitted; even a coat of arms for the colony was achieved, and a National Anthem was composed for these (Captain) Cook's tourists. Personally conducted by the French Cook they made the voyage,

landed, and established themselves by the side of a small stream, on land from which, at some earlier date, the larger trees had been cut down by the natives to make a yam patch, so that the bush, now again grown over it, though denser, was scrubbier and less difficult to hew down than the monster trunks of the primeval forest. Here was the Land of Promise. They hacked, they hewed, they set up their wooden frame-houses, they dug, they planted their seeds, toiling as they never had toiled in their native France under the burning incessant sun of the tropics, drenched by the swamping fury of its rains. They were entirely ignorant, poor wretches, of the methods of life proper to those who work in such climates, or of the enemies of mankind that the tropics produce. All around them were the hills clothed in dense forest, solemn, silent; harbouring no ferocious creature, it is true, but from the pools and water-holes beneath its shade there came forth against them the equally-to-be-feared malaria-bearing mosquito. Its malign power was at that time undiscovered, so that they regarded it not, except as an annoyance. Sunstroke struck down numbers of the field-workers, malarial fever overwhelmed many more, and from lack of fresh milk the children wilted and died. The hot unsuitable

houses of the little settlement became hospitals, their surroundings a graveyard. The pathetic end of the Cook Colony soon came. Their numbers dwindled ever fast and faster, and finally their Government sent a ship and repatriated the last of them. The rejoicing bush swept in over the futile agriculture of the white invaders, and that was the end of the adventure.

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The south-eastern part of Efate is low and nearly flat, and when you dig down a couple of feet or so through the humus from which the forest arises, you find that the tough roots are thrust into the sponge-like cavities of an ancient coral-reef beneath.

There have been several upheavals from the sea of this part of the coast of the island, and at each lift the ever-growing fringe of submerged coral that surrounds the coast has been converted into dry land. None of the upheavals, apparently, has been very great in height or extensive in area, perhaps not more than a foot or so at any one of the tilts; and as each new low-water line has been established, the coral has grown out to seaward from it in a flat reef, until the time came for its upheaval. This process of alternate growth outwards and upheaval is clearly de-

fined, and as you walk seaward from the forest you can count the successive terraces, fairly wide, but low in height, which indicate the upward tilts of the coast, followed on each occasion by the new reef formed between tilts. The last must have been long ago, for there is now about one hundred yards of coral rock between the edge of the green bushes and the sea-edge where, standing on the top of the submerged slope, you can look down the hill-side of growing coral into the darkness of the ocean depths from which it springs. Some day, no doubt, this one hundred yards of tidal coral flats will be heaved up a few inches, and become forest land, while new coral will begin to grow outwards and edge it around. On this, the weather side of the island, there is not even a notch into which, with the south-east Trade wind blowing, it would be possible to land in a boat for surveying or any other purpose. In order, therefore, to establish along this coast the survey beacons, flags, and white-washed marks required for our triangulation and sounding work on that side, it was necessary to start from a little bay to the northward, named Metensa, where landing was possible, and to tramp for a distance of twenty miles around the south-east facing coast, putting up the marks as we went along, and camping for the night

where we could. There was a place named Nárapo in a well-sheltered bay on the western coast where the ship could anchor, and the tramping party was ordered to make round for this point and rejoin there. I was given this coast-marking job, and was accordingly landed with four men at Metensa. We had a heavy collection of gear to carry with us, consisting of our food for three days, mark-flags, lime for white-washing, calico, spun-yarn, axes and bush-knives, and "Trade."

"Trade" was for payment of the native carriers and guides whom it was necessary to engage for the expedition, and was preferred by them to the hardly understood money of the white man. It consisted chiefly of tobacco, so-called, of the most biting nature, made up in thin black sticks six inches long, matchboxes consisting of small tin cylinders each containing about twenty matches, bush-knives and "tomahawks," and yards of calico of the fashionable colour of that time, which was bright red. Fancy floral designs of many colours had "gone out," and "were no longer good taste, Modom."

We were armed with "letters" from Mr Macdonald, the then reigning missionary (Presbyterian), to the Chief at Metensa, telling him to obtain for us such "labour" as we

required, and to give us every assistance. Above all, the letter gave the Chief the most ferocious warnings against the least interference with our precious flags and marks when once in place along the coast. To us, toiling difficultly with theodolite and sextant, and absolutely dependent in our work on the continued existence in its original position of every such mark, to find one of them suddenly disappeared, or (almost worse) shifted in position, would be fatal. It would mean the retriangulation of the whole area, and endless delays and doubts as to the fixing of the position of soundings already taken off the coast. Our flags were large; they were also of the most desirable material and colours—namely, calico in plain red-and-white stripes. One of them would go far towards providing the smartest of Sunday suits for a whole village; for even under missionary influence the native costume was still somewhat exiguous. The temptation was severe, but I may add that the warnings of Misa Makadonal proved to be generally sufficient. Whether due to ghostly terrors, or to the more practical consideration of what “man b’long man’wa” might effect in the way of reprisal, our marks were never disturbed, and even the little rags and ribbons torn off by

the wind were preserved, and handed back to us in all solemnity.

So one morning we landed at Metensa with all our multifarious gear. The missionary's letter was presented to the local Chief, and the most Christian of handshaking went all round the village, the necessary but wearying token of friendship and peace. No member, old or young, could be omitted; and after something like seventy hearty grasps and pump-handlings, one longed for the comprehensive waving of a palm branch, the sign devised by the early discoverers, equally satisfying and far less laborious. It seemed a pity that this excellent method had been allowed to die out.

Half a dozen carriers were soon enlisted, headed by one Uili (which is missionary for "Willy"). There was largesse of "trade" in advance to all, as an earnest of the payment they might expect at the end of their service, and a specially magnificent tomahawk (value 1s. 3d.) formed a showy offering of honour to the Chief. We had been warned by the missionary that the country over which we were to tramp had a coral foundation, which would instantly absorb the heaviest rainfall, and that therefore there would be neither streams nor wells along our route, so that

inquiries as to carrying water now became necessary. But Uili, who had been at "labour" in the Queensland sugar plantations, and had learnt the absurd "English" known in the islands as "Beach-la-mar," said that there was no need to do so.

"Plenty water he shtop," he said. "Five fella man he come carry bokkus b'long you (this referred to my boxes of instruments), cal'co, kaikai (our food), eberyting he takum he go, good fella man, too much, my word (this referred to their great ability as carriers). Good fella road he shtop," he went on, "alongo dat fella bush, me, me sabby plenty, you come along, altogedder man he come. Bymbye you gib good fella bush-knife b'long my? (I assented to this payment). All-light, you come along quick, close up sun he go down, night-time no good." It was indeed getting on in the day, and thus adjured we set off, myself and the four bluejackets, Uili and his five well-loaded gang, and plunged into the dark green tunnel of the particular bush-track indicated by Uili. We marched perforce in single file, and he led the party, armed with the bush-knife that later was to be his own, chopping away the thrusting branches on either side of the track, and cheerfully calling "Wá-o, Wá-o," the native *yodel*, until the answering

shouts from the village could no longer be heard.

This was a track seldom used, and consequently was somewhat grown across, but in any case, as you go through the narrow roads of the island bush, it is etiquette to carry a large sharp knife about two feet long, shaped somewhat like a bread-knife, with which as you walk along you slash right and left, cutting away the shoots from the shrubs on either hand that otherwise would soon close up the path.

In time this slashing becomes a habit, but it makes walking both tiring and time-devouring. At the end of a mile of bush-track you feel as if you had tramped for at least five, and if you have done it in half an hour it is not at all bad going.

Our track went winding on, never straight, never wider than necessary for the passage of a single man, now under giant trees, now through scrub, occasionally through a clearing that was a garden last year, occasionally through a present-year garden of about half an acre planted with yams, or bananas, or the simple and easy-growing sweet potato. Next year this garden too would be given up, and a new clearing be made for a new garden, while this one would be allowed to relapse first into scrub,

and later into high bush again; for thus is the rotation of crops arranged for in Oceania.

Several tracks forked into ours as we went along, but Uili knew what he was about, and which of two precisely similar paths to take. "Me, me sabby road too much, my bloodyword." The farther we got away from the Mission teacher of his village, the more Queenslandish became the "Beach-la-mar."

At last; after three hours' hard tramping, we found ourselves in an area of immense trees set fairly widely apart, and beneath them there was a sense of openness; there were even patches of a coarse grass such as we had not seen anywhere else along the track.

Three bush tracks met at one point, and they were wider than ours and straighter. A little farther on the forest ceased, and there was a strung-out row of coco-nut palms in full bearing.

Although there was now no trace remaining of native huts, we could be quite certain that we had come to the site of a former village, for the presence of coco-nut trees invariably indicates the place of habitation, past or present, of man. There is no such thing as a wild coco-nut tree. Just as dog and horse were the "first friends," so coco-nut and banana must be the "first trees." Both of them now need to be

planted and propagated by the hand of man. Abreast of us was a fence of hibiscus, its strong upright stakes planted closely together, forming an impenetrable hedge enclosing a garden, the entrance to which was near where we stood. The opening was blocked by a fence of stout bamboos driven deeply into the ground, strongly secured, and four feet high. Looking over it we could see within a respectable-sized field of bananas, sugar-cane, and pawpaws—the later always, though quite incorrectly, named “mammy apples” by white people in the islands.

“Dis good fella place,” Uili announced, “al-togedder man he shtop dis side, sun he go down. Bymbye tomorra, sun he come up, all man he go on.” This meant that here was to be our camping-ground for the night. It was already nearly 5 o’clock, and the swift-coming dark would be on us in little more than an hour. The one desire of all of us white people was tea.

“Whatname place water he shtop?” said I in my best Islandese, newly acquired, to Uili (he would not have understood any other idiom).

“Oh, plenty shtop, close up,” said he, “me, me sabby place good fella water shtop, me catchum,” and seizing two billies that had

been unloaded from the carriers, he dashed off into the bush. Presently he returned with the two cans filled with clean cool water. No one in the islands, and certainly no native, drinks water. Thirst is invariably quenched with green coco-nut "milk," so that one might have justifiable suspicions as to the purity of origin of a drink so little known to the provider, who would scarcely be able to tell "good fella" from "bad fella." Even when boiled to make tea, any naval man would have anxieties as to "shore-going" water, accustomed as he is to a pure if sometimes rather flat fluid, every drop of which is distilled from the sea.

"Whatname place you you catchum da fella water?" I asked Uili.

"Good fella place," he replied, "you come lookum. Plenty good fella water shtop, my word."

Taking the remaining billies with us, I went off into the bush with him, looking wonderingly about me for the "good fella place." The trees got thicker, and the tangle underfoot denser; we were quite off any track when after about two hundred yards Uili stopped and pointed to an old tree of considerable girth, with large buttressed roots on all sides of it. Just above these, at about four feet from the ground, a large excrescent woody

growth, as big as the trunk itself, projected out from its side. It was five or six feet high, and ended in an abrupt flat top. It was just like a pulpit built out from the pillar of a church. The outside of it was sufficiently twiggy and nobbly to permit one to scramble up it with bare feet. Uili did so, I passed the billies up to him, he dipped them into the pulpit, and brought each one up filled with clear rain-water. It was perfectly clean and drinkable, and, in fact, made excellent tea.

By the time I had got back from the tree-tank the fire was going, and the first two billies were nearly boiling. As Uili and I appeared by one track, one of our carriers appeared by a second, bearing by the wings two unlucky "kokoráko"—a nice pair of fowls, which he had managed to catch in the bush. Evening was coming on, and, all-forgetful of human ways, these descendants of the tame hens of the now disappeared village had climbed on to their nightly perch, but scarcely had gone off into their beauty sleep before the stealthy "black hand" was on them, and they were caught away into another sphere of usefulness—the white man's pot-mess. My sharp hunting-knife—an absolutely essential comrade of the bush for those who tramp the islands—was requisitioned from its sheath at my waist

for the necessary assassination, and by the time we were all really hungry, behold! tenderly cooked, and laid out on large leaves, fowls, sweet potatoes, pawpaws (green ones, cooked like a vegetable marrow), and bananas. The bush and the neighbouring garden had supplied us with all these things, as well as with water. It certainly was "good fella place." The ship's biscuit and pickles and "Fanny Adams" (or preserved mutton) brought from the ship went to our hugely pleased carriers as a great and signal novelty, a feast indeed. Night had suddenly fallen, and I have never discovered at what moment of this "kaikai b'long white man" our carriers melted away into the surrounding woods; but when my party of blue-jackets and I had reached the stage of tobacco, and the fire was dying down, we realised that the night, blacker even than the Melanesians, had swallowed them up. Ground-sheets were amongst our equipment, a clear and flat place of soft grass by the side of the widest of the bush-tracks had been marked out beforehand for our bedroom, there was no symptom of rain, and we laid out our tired bodies to sleep in a row under the warm shelter of the green ceiling overhead.

In the middle of the night a little sound of cautiously approaching feet awoke me, and

equally cautiously I opened my eyes. The moon had risen since we laid down, and a dim white twilight glowed in the alley-way between the trees by the side of which we were lying. The men were all fast asleep. I looked down the path, and there beheld an advancing procession of wild pigs, pale and indistinct in the semi-darkness, evidently heading for the banana garden, the entrance to which was scarcely thirty yards from us. There may have been as many as twenty of them, great and small. They were disposed down the path like a fleet in single column of line ahead, and were led by a horrid-looking boar-flagship, hump-backed, heavily bristled and tusked. He seemed to be suspicious of something. Evidently the smell of the place was not all it should have been, and at each cautious pig-length of safe advance he uttered a small *sotto voce* grunt of encouragement to his following harem and nursery.

Still the men slept, and I remained as one dead, enjoying my front and exclusive view of the passing squadron, which now had come into a streak of real moonlight through some rift in the branches overhead, and, like an enemy submarine, waiting the moment to fire my torpedo. Presently it came. The flagship, having arrived at the strong and high

bamboo fence blocking the entrance to the garden, made a signal to the ships astern: "Stop engines—disregard admiral's motions," and therewith made a heavy butting jump at the stockade, the top of which he could only just reach with his trotter-tips. No result. Then a second, but still the barrier stood firm. With that, and with an angry grunt, he turned to the right, and made an attack with his ugly jaws and teeth at the stout hibiscus stakes forming the fence at that side. These had become firmly rooted in the ground, and so far were quite secure; but the boar's sharp teeth and tusks were still able to rend effectively the stringy and pithy uprights of the fence, and some beginning was being made towards a complete breach of the woody wall. At this juncture I fired my shot. I jumped up, clapped my hands, and said "Shoo" (but oh, how I longed for a gun!) It was enough. With one immense concentrated grunt, squeal, almost howl of dismay and surprise, the pig fleet turned, each unit in its own length, and was off at about forty-five knots back along the bush-track, butting and struggling and hustling each other as they fled, the admiral boar, in his haste to get to the head of the retreat, plunging regardlessly over the heads and bodies of his family. It

was a most entertaining sight ; but if the pigs had been startled, what shall be said of the four fast-sleeping bluejackets ? It was not possible to arouse them beforehand without spoiling all the fun, and consequently they were as unconscious of what was about to happen as were the pigs themselves. They leapt to their feet in the midst of the tumult, half-awake, imagining that a general massacre by savages from the bush was about to take place. They were just in time to see the last of the hurrying skurry of the departing squadron, and to join with me in applause of the smart carrying out of the pell-mell evolution.

With the dawn next morning Uili and his companions returned. When the sun arose out of the sea to the east, as silently and from as hidden a chamber arose the natives out of the thick bush to the westward, and rejoined our party. I then discovered from Uili that we were encamped not far from the coast of the island.

“ Saal-water he shtop, close up,” he said. The fact had not been disclosed the night before, presumably because it was to the natives so obvious. Three or four hundred yards of bush-track led to the coral-fronted edge of the sea. There was a fringe of pandanus trees, or “ screw pines ” as they are often called. They look

like pine-apple plants grown up into a tree twelve feet high, having long sharp leaves growing spirally out from the stems in the manner of a screw, with pine-apples (apparently) hanging from the ends. These are tempting enough in appearance, and you wonder why the natives allow them to remain in such numbers, until you try one yourself, and find that they are shams, and consist within of a dry woody fibre, quite uneatable. They are one of the greatest frauds in the islands. It was pleasant to taste the fresh ocean breeze, unspoilt by blowing through damp trees; but the coast was unencouraging as a place on which to spend two entire days, as we were about to do. From where we stood it bent round to right and left in flat uninteresting points of rough coral strand, fronted by wide terraces of grey, dead, coral rock, descending about one hundred yards to the low-water line in shallow steps, the lower flights holding large flat pools of tidal water, a few inches deep in most parts, but with deeper holes and pockets. I went down the coral terraces to the lowest of them where the surf was sucking and surging in the crevices of the rock, and as I went by I saw that several of the pools held fish of quite eatable size, left behind by the tide, which was now at its lowest

point. I halloed to the men, who were getting together dry beach firewood with which to cook breakfast, to bring sticks and baskets, and it was not long before we had scooped out a dozen nice-looking half-pounders after an exciting but decidedly drenching fish-hunt. Wrapped in banana leaves and put instantly to broil on the wood fire, they made a breakfast on which a man might lean comfortably till dinner-time, and put in a long tramp over a rough coast-line meanwhile.

That was our work for the day, interspersed with the erection of survey marks at intervals of a mile or so. These consisted of large tripods cut from the adjoining bush, and cairns, and flagstaffs adorned with large white-and-red calico flags. Over all the stones and wood-work was laid a thick coating of whitewash, so that each mark might show up clearly from seaward against the dark green of the bush with which the whole coast was backed. Thus, for this day and for most of the next, we worked southward and westward around the desolate and unpeopled coast, until on the afternoon of the third day it was time to strike inland, and to cut across the base of a certain headland to reach Nárapo bay on the other side of it where the ship was to be at anchor, and where we were to be picked up. We were

rather later than we wanted to be in reaching this turning-point, which was at about four miles from the appointed rendezvous. Our burdens of lime, calico, and spun-yarn had by this time all disappeared in the making of the marks, and the provisions also were nearly run out.

Keeping Uili as a guide, I paid off the carriers—in fact, I have no doubt I overpaid them off,—and in order still further to lessen our loads, I spoiled altogether the labour market by giving them the remaining ship's biscuit and preserved mutton—known to them as “bullamacow sheepy.” After our two tiring days of tramping I wished to travel the last lap as lightly as possible, with only the instruments and books on our backs, especially as Uili said that it would be a rough untravelled track over which we would have to go.

“Bad fella road shtop, too much, no man he go b'long him.” It was indeed, and hilly too. It was far from his own country, and Uili was not very certain of his way. At last at one point, where there was a fork in the path, he stopped and remarked, “Me lose him.”

It was by this time nearly sunset, and this fortunately is a time at which the natives have their evening meal, for a short exploration

down one of the two paths revealed a small twinkle of light from a cooking place, which meant that there would be some one there to set us right. "Wá-o, Wá-o, Wá-o!" called out Uili, to announce our presence; for it is a dangerous breach of etiquette in the bush suddenly to appear, strangers, out of an unexpected nowhere without any warning. Disregarded, it might have meant the end of all earthly journeys. Instantly there popped up half a dozen heads and lean naked bodies from the fireplace where *kaikai* was proceeding, and an ugly pariah dog gave forth several indignant barks; then, smelling the strange and terrifying odour of white man, he retired growling into one of the native huts. It was a tiny bush village on which we had hit, but it contained at least one hero. This was an oldish man, swathed from his waist to his skinny knees in a short "cal'co," while his body was proudly wrapped (and oh, how abominably hot it must have been!) in a British soldier's red tunic of high antiquity. It had (once) white facings, but all its regimental markings and brass buttons had long since disappeared. On its left breast were the tattered remnants of the ribbons of the Egyptian War medal of 1882, and of the Khedive's Star. It was impossible to discover

how he had come by this garment, but there it was. He was a little, thin, white-haired man, with a small pleasant face and bright eyes. Uili seemed to know all about him, for he told me later on that he was a great soldier and a very brave man, and that it was right for him to have such a coat. He had greatly distinguished himself in a war that, years ago, had taken place between his village and another not far distant. It appeared that this venerable hero was accustomed to walk the most ghost-pervaded of bush-tracks at dead of night, regardless of "debble-ums," and would creep noiselessly along them until he was outside the huts of the enemy. The walls of a native house are a mere thatching of coco-nut leaves, and there the old soldier would wait outside until he heard the voices of the unsuspecting inhabitants. Then softly moving round to the point at which the voices were most clearly heard from outside, he would place the muzzle of his musket at that fatal spot, and let rip. By this means many of the enemy were slain.

I remarked to Uili that this did not seem to be a very brave proceeding. "Oh!" said he, "s'pose man he come out, dis fella man he no run away, him he *shtop*." Such gallantry

deserved to win the war, and, I gathered, actually did so.

The village consisted of not more than four or five huts, surrounding a small irregularly shaped open space. I did not count heads but there were about twenty inhabitants, of whom more than three-quarters were men. Such excess of males over females in these bush villages is not uncommon, and it is the invariable signal of the dying-off of the race: one of Nature's methods of extinction when it has run its appointed course. A long and heated conversation passed between Uili and the Chief of the village, much longer than was at all necessary for directing us on our way. Swift night was closing about us, and it seemed as if a parting present to the Chief might be a tactful indication that we wanted to get away.

The small change of the island is "tambak," or tobacco in black sticks, and, being light to carry, this form of "Trade" was almost all that I now had remaining with me. A general distribution of this, with a special extra of three boxes of matches to the Chief, brought, as I had hoped, the debate to a close. Torches of coco-nut fronds were handed to us, and the track leading to our destination was pointed out. By this time it was pitch dark, and we

set forth in single file once more, followed by shouts from the village, with Uili carrying a large torch in front, and lesser lights in the hands of the four bluejackets and myself. Answering shouts of "Wá-o!" went back from all of us, having now learnt the necessary trick of voice for this *yodel*, and thus, between lights and shouts, we kept the "debble-ums" of the dark bush in their homes and out of harm's way.

In less than five minutes we found ourselves suddenly brought up by a fence surrounding a taro patch, marking the absolute end of the path.

"Ko!" says Uili in great surprise.

"Whatname you makeum," said I; that is to say, "What is the matter?"

"Dat bloody fella he talkum gammon b'long me," said Uili; "him, he no good, you look-out b'long him, dis wrong-fella road."

I then discovered what all the altercation in the village had been. The natives were anxious that we should stay the night in their filthy houses, in order, no doubt, to relieve us of whatever they could most easily steal in the way of "Trade," and this Uili most properly would not agree to. The shoutings that had followed us as we set forth were to tell us not to be such fools, but to come back.

Now that we were so hopelessly "bushed,"

I suggested going back to the village and compelling one of the men there to come with us to show us the way, but Uili would not hear of this, and indeed seemed to be in a regular and unashamed funk. Perhaps he thought the old soldier might be there waiting for him behind a tree with his renowned musket, and if so, he was not far wrong, as it turned out. Uili found that it was possible to get back to the original point where the roads had forked, and he had "loseum," by a side track which did not go through the village, though passing it fairly closely. He proposed that we should now take this by-pass, and on reaching it, try the other fork of the original road, which was, no doubt, the right one for us.

Before we had started on our expedition the missionary had told us there was no need to carry rifles anywhere in Efate; that peace reigned throughout the island, and that in any case no native would dare to attack "man b'long man'wa'," which they knew us to be. We were thus thankful not to have the additional burden of small arms with all our other gear, but, just in case of trouble, I took my revolver, carrying it on a belt round my waist, but out of sight, inside the voluminous top of my breeches. Uili, who did not know about the revolver, was visibly relieved as well as

surprised when now I produced it. I cocked it and held it in my hand, leading the way with Uili's assistance, all of us walking as quietly as possible with lights dowsed and keenly on the look-out.

There was a little bend in the path just before we got to the fork for which we were making, and as we turned it, there, dimly visible in the darkness, was the old soldier standing motionless, musket in hand. No doubt he had heard our approaching footsteps, but did not think we were so close. I made a grab at his frowzy old coat, and holding my pistol to his head to frighten him (as it certainly did), called to the men behind to seize the old sinner and take away his gun. This was quickly and silently done. Uili then told him he was to go ahead of us and guide us to the "saalwater," and to prevent his desertion he was secured to two of the bluejackets with our last fathoms of spun-yarn. I then held the revolver over my head, and fired three or four shots into the air.

The rest of the village, I felt certain, were not far behind their soldier leader, and this *feu de joie* was intended to send them home again. A rapid pattering of feet showed me that I was justified. We saw them no more. We relighted our torches, the old soldier obedi-

ently set forth in front, thoroughly frightened, and after about an hour of difficult tramping we emerged on the beach. At a little distance away was the *Dart*, our home, her riding light on the forestay bright in the blackness of the air, bright too in an oily path of light over the equally black water. A pleasant sight indeed to a weary tramping party! A pistol shot signal, and "*Dart* ahoy!" brought us a boat in very quick time, and we came on board bringing our prisoner with us, nothing brave about him now but the braggart colour of his coat.

He slept on board under the eye of the Quartermaster on watch, and the next day we took him round to Havannah Harbour to talk to Mr Macdonald at the Mission station. He had asked us to get his assistance in case of any difficulties arising with his parishioners during the course of our survey. When I told him what had happened, and when Uili had added his share of the story, his long face and grey beard seemed to grow longer still. He thought we had come out of it very fortunately. He knew that district to be a wild one, and he had no doubt but that plunder was the reason for trying to keep us for the night in the village, and, this failing, for misdirecting and then waylaying us. The people were, in fact, as

Uili had said, "badfella man, too much, my word" (in sanctified hearing, the "word" was no longer qualified).

The old soldier was then planked forward on the Mission quarter-deck, his knocking knees counterbalanced by a firm red breast. Misa Makadonal knew him for a Mission renegade, and gave him a talking-to in his own language, in which anger and Christian sorrow seemed to be combined judiciously, and then handed him back to us for further treatment. We took the old sinner back to the ship and kept him there at work for a few days, until it was time to go again to the bay at which we had been picked up on that dark night. He went home from the *Dart* a reformed character, with quite new ideas as to the nature of man b'long man'wa'. The men had been amused by the old chap, and had filled him up with food of the most varied kinds, and spoilt him thoroughly, after the manner of bluejackets. There was no "punishment" about it at all.

He bore away with him presents not only for himself but also for the badfella man, his village mates. That, however, is the real way to deal with these wild creatures. The old soldier would now tell them of our ship, and of its vast stores of food, of men, of muskets. There would be no doubt left in their

minds of our strength and ability to punish; and yet with all this we could send them presents in return for their evil deeds against us.

Magnanimity of this kind always pays with savages; it is far better than punitive expeditions, which savour of "bullying," and are, after all, only their own primitive method of "paying out" any one. This was the first time I had seen this other method put in practice, and it was so successful that I have followed it on several similar occasions since. By its means badfella man became goodfella man, and the men of this village became of the greatest use to us during the survey as bush-clearers, trackers, carriers, and, best of all, as preservers and protectors of our calico marks, though to any native such material, so confidently spread along the coast, was more to be desired than rubies. I have little doubt that, later on, all of them "took the Book" (as joining the Mission is called among them), and have by now died, or will die in the odour of missionary sanctity—an odour, as experienced in any Mission schoolhouse on a hot day, almost more penetrating than that of heathenry. But if so, it was through our tobacco-providing presence, and through "work-about b'long man'wa'," that they first became established on the Upward Path.

## CHAPTER VI.

## THE SHEPHERD GROUP.

THE hydrographic survey of Efate and the adjoining isles having been completed, with their surrounding waters, the *Dart's* orders took her fifty miles farther north in the New Hebrides, where a string of seven small islands and islets, named the Shepherd Group, lie off the south-eastern end of the large island of Epi, and here we began to make a new chart.

The Shepherd Group seems to be comparatively newly made. The native traditions say that twelve generations ago the islands of which it is composed were part of the island of Epi itself, and formed the district of Kwei. A tremendous volcanic disturbance took place at that time, which broke Kwei up into the islands that now exist, separated from one another by deep water. The story continues to say that when the eruption began the inhabitants hid themselves in caves and other

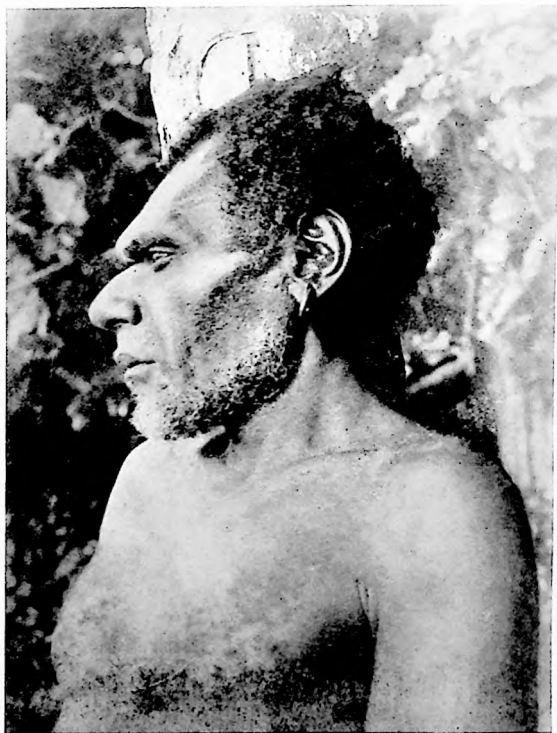
presumably safe places, and that one man got inside a "Napea." A Napea is a native drum, and is made of a tree trunk eight or nine feet long, hollowed out and planted upright in the ground. There is a long slit in one side, and a slim man could get inside one of the larger drums without much difficulty.

As soon as the disturbance appeared to be at an end the man in the drum put his leg out through the slit in the side, but the ground was still too hot even for a native foot, so he drew it back and waited for a few days, subsisting meanwhile on some dried bread-fruit with which he had thoughtfully provided himself, until at last he was able to bear the heat and got out. To his horror he discovered that he was now on an island, separated from Epi, that there was no green thing growing on it, and that he was the only man left alive in the world. At this point there is a gap in the account, and the next page in our island story introduces a party of adventurers from Efate, who landed and found one solitary plant growing on the island, known by the name of "Tongulata." Accordingly they named the new island, which was the largest of the group, "Tongoa," and the next in size "Tongariki," or Little Tongoa. Later on, when the new islands had become green and

habitable once more, further adventurers came to settle, chiefly from Efate, and these are their descendants at the present time.

It is likely that this part of the story is substantially true, though as regards the man in the drum is rather too circumstantial, for the language spoken on the islands is a refined form of one of the Efatese dialects, and is markedly different from that spoken now in the southern part of Epi, their nearest neighbours. As to the date of their arrival, Ti Napua, the head chief of Tongoa, can name his ancestors back for ten generations in direct line, and this brings us nearly to the time stated for the formation of the group. But it is clear both from the appearance and intelligence of the present natives that other invaders of a different and much superior race to the Efatese—namely, Polynesians, have settled in these islands in times past.

As Tonga is the nearest group of islands inhabited by Polynesians, we may perhaps find in that name another etymology for the words "Tongoa" and "Tongariki" more credible than that derived from the name of the plant Tongulata, as stated by the tradition. The natives of the New Hebrides are Melaneseans, dark-skinned, slim-bodied, with the savage countenance and tight-curved frizzy hair



NEW HEBRIDEAN NATIVE.



of the Negrito family. Polynesians, on the other hand, are brown and beautifully shaped, with strong athletic figures, good-looking intelligent faces, and long wavy black hair. A Polynesian is almost as different in appearance from a Melanesian as an European is from an African. A great deal of this Polynesian superiority was visible in the Shepherd Group natives, and it was shown as well in their greater intelligence and pleasant manners.

The south-east Trade wind blows almost incessantly from Tonga towards the New Hebrides, and the ocean current between them sets in the same general direction. Though the Tongan canoe is an unseaworthy concern—a mere hollowed log with an outrigger on one side to give it a semblance of stability,—it is a fact that the thousand-mile journey from the Polynesian Islands to the New Hebrides has from time to time been accomplished in these frail yet lumbering vessels. The voyage has almost certainly in each case been an involuntary one, and has occurred through the canoes having been swept and carried away to the westward from their own islands by a sudden on-coming of strong Trade wind while making some local sea passage. Until fairly recent times the natives of all the New

Hebrides islands were cannibals, and though the welcome they would have given to a stranger might perhaps be considered as a warm one, since an oven would have been included in the reception programme, it was one to be avoided if possible. Certainly it was not one that a canoe-load of unvictualled passengers, unless driven by wind and weather, would set out upon to experience.

Some Polynesians have, however, undoubtedly survived the long journey across the ocean, for besides the signs of this race among the Shepherd Group islanders, there is an islet off the west side of Efate, named Meli, which is strongly if not entirely Polynesian in its inhabitants, and there is another instance which occurred in what may almost be called "historical" times, as follows. About ten miles southward of the Shepherd Group, midway between them and Efate, is the island of Mai. In the year 1850 or thereabouts, a large outrigger canoe containing a crew of thirty Polynesians arrived off the island, and drifted helplessly before the wind and current on to the sandy beach of a place on the island named Sasake. This was before the days of missionaries, and, with the exception of three, the unfortunate passengers, weak with starvation and thirst and the rigours of their

tremendous voyage, were promptly clubbed, cooked, and eaten.

Why these three were spared is not known, but one of them was still alive in 1890, and I have seen and handled a small portion of the canoe in which they all voyaged, which is now a missionary curio. The Polynesian admixture in the Shepherd Group is therefore not only possible, but is probably certain.

Tongoa is the chief and largest of the group, and Lumbúkuti is its capital. There is a fair anchorage off the village, the principal Mission station of the group is there, and there is a church and a white trader, at whose store on the beach European goods may be bought.

The missionary (Presbyterian) was a Mr Michelssen, a Norwegian by birth, but he spoke perfect English. He was much beloved and respected by his parishioners. His word, as we soon discovered, was law, and it was a very kind and sensible law, too.

There are seven islands and islets in the group. Their volcanic origin is so recent that even the indefatigable coral "insect" has not yet had time to establish himself round any of their shores. The sea-fronts of all consist of a deep-brown lava rock, or else of stretches of coal-black pebbles and boulders, which the white surf perpetually combs and keeps tidy.

Inland, these islands are lovely beyond description. The bush is nowhere dark, nor matted up as on Efate and the older larger islands, but is open, and easy to make a road through when required. The existing tracks take you everywhere through glades bordered by crotons glowing in every shade of red and pale gold and delicate green, with for background grey-green aloes, dark-green dracænas, and the brown trunks of giant trees, while in the moist gullies there are fairy forests of tall feathery tree-ferns.

Every bough that projects at a sufficient angle to support them is encrusted with orchids of a thousand kinds, most of them in full bloom, amidst ferns and festooning creepers. Here and there through the bush a dark-green banyan has cleared for itself a place in the sun, and stands out in immense contrast to the remaining trees. There was one on a hillside near the landing-place on Tongoa which was even more remarkable than usual. It had perched itself on the top of an otherwise bare perpendicular cliff about fifty feet high, that showed stark and grey amidst the rich growth of the forest. The great banyan possessed six trunks, and from their bases there poured down over the rock-face an entanglement of white roots, clinging to every crevice, that finally thrust themselves in a bunch into a

cave at the foot of the cliff, in order to reach a spring of water that lay at the back of it. The tremendous boughs above, with their glistening closely-packed leaves, must have shaded nearly a quarter of an acre.

So far as white man was concerned, the Shepherd Group was completely a "back-block," and, except for the missionary, ours were practically the first white faces seen there. In the preliminary stages of our survey I was told off to visit three islands near Tongoa—named respectively Ewose, Puninga, and Tongariki—in order to put up mark-flags on their sharp summits, and to get at each of them rough angles with a sextant to the other peaks, thus pioneering the field of work for the regular triangulation by theodolite. The islands are separated from one another by about three or four miles in each case, and it was just a day's work to land at each of them and climb to their summits, the first two entailing stiff scrambles up about one thousand feet. Tongariki, which was one thousand six hundred feet high, was left to the last, as it was possible to sleep there in the mission hut, and leave the climbing of the peak to the following day. As we reached each isle in turn the excitement and welcome of the inhabitants was prodigious. When my party

of bluejackets and I climbed up the precipitous hillsides we were accompanied by a crowd of guides (in each case the fruit of the missionary letter of introduction with which we had been provided), who would not allow us to carry a single article ourselves, and would have carried us as well if they had been permitted. Scattered through the bush were tiny patches of cultivation—yam, taro, and what-not—clinging, as it seemed, by hidden hooks to the preposterous slopes; and as we went through these hanging gardens we were proudly exhibited to the lucky people who happened to be at work in them. In the case of the less fortunate, through whose yam patch our path did not actually pass, a shouted conversation would take place between them and our guides, and as a result a window would swiftly be cut in the dense tangle of creepers and ferns which obscured us from view, and we would then, deferentially yet firmly, be led to the opening in order to exhibit our (conventionally) “white” faces, crimson with exertion and streaming with perspiration, to the wondering natives. At one place where we had halted, partly to get breath and partly for exhibition purposes, I looked over the edge, and could see, ever so far below, a crowd of six or eight Zacchæuses clustered in a tree in order to get a clearer view.

I called the bluejackets to come and look, and our appearance was greeted with shouts of wonder and delight. One of the guides with us went so far as to take off my broad-brimmed hat, so as to show that there was no deception, and that we were the genuine white article. This aroused the most tremendous applause, and one began to feel as royalty must feel when some great public progress is being made, and every eye searches their every feature, even though already well known through the cruel eye of the camera. But in our case the curiosity was more pure; the spectators had never had the least hint, such as a photograph gives, of the real appearance of this often reported but never hitherto substantiated unnatural white colour in man. It was impossible to be annoyed; the surprise of the natives was too amusing, and in some obscure manner gratifying to the vanity. Arrived at the summit, it was necessary to climb a tree in order from its top to get a clear view round the field of the survey. I felt like a murderer as I shinned up, kicking off as I did so wreaths of scented blossom and delicate ferns and mosses. But there was no help for it. The path of science is never a "primrose path," and if it has to be an "orchid" one, precariously followed up a tree, with sextant in one hand

and dear life in the other, æsthetic feelings must be suppressed, or no angles will be taken.

We reached Tongariki just as the sun disappeared below the horizon, and though the landing-place is on the western side, and thus faced its final rays, the shadows of coming night were already apparent. As we approached the shore all that we could see from the boat was a steeply sloping beach of large black cobblestones, having a band of smaller pebbles at their foot. A considerable surf was rushing angrily up the beach and rattling down it, rolling the stones in both directions, and turning cobbles into pebbles. Not at all a nice place on which, in fading light, to beach a long and heavy boat filled with men and gear. Not a soul was in sight. Above the beach the island side sloped steeply up, covered with immense trees, now rapidly filling with darkness. At one point was the opening of a bush-track, and a couple of canoes lay high on the beach in front of it. Evidently this marked the best place to land, so I directed the boat towards it and laid on the oars outside the surf, calling the island call, "Wá-o, Wá-o!" as loudly as I could. As if by magic, the deserted beach suddenly became covered with men. I came in as near as I dared and shouted for "Tom,"—a returned labourer from Queensland, now

become the missionary's deputy, and (lay) curate in charge of Tongariki. Tom thereupon stood out, a splendid figure of a man, wearing a hat of a green old age and a white waistcloth.

I held up my letter of introduction, and he instantly plunged into the surf, swam easily out to the boat, took the letter from the bowman to whom I had passed it, and then swam ashore again to read it. By this time the crowd on the beach had swelled to about a hundred men, women, and children. Tom looked round commandingly, gave a few instructions, again swam out to the boat where I waited, and before I knew what he was attempting he had scrambled up over the stern, and was squatting behind me on the stern grating. He reached out a large wet hand to be shaken, and this done he took charge of me and the boat's crew. "Altogidder man he put in oar," he commanded. "You, you no frighty, me, me take-um boat; all fella man (he indicated the boat's crew) he sit down, he shtop." Obediently they and I sat down, and stopped.

Next, with a rush and a splash through the surf, twenty men or more were out swimming alongside the boat, the boat's long anchoring rope was passed out and taken up the beach

to be manned by the waiting crowd, and then, with such a howl as I have never since sat in the midst of, the boat and all that was in it—a good ton and a half of dead weight—was, at Tom's word of command, rushed through the surf, up the steep bank of boulders, past high-water mark, and on to the small plateau above it at the foot of the trees. As soon as it stopped, supported upright on its keel by natives on both sides, we put out our legs over the gunwale and landed in a manner becoming white and Christian gentlemen on the dry land—a fashion very different from that to which we had become accustomed in the islands, namely, in the surf, and wet to the waist.

Then took place the inevitable handshaking, until there were no possible enemies left on either side. It was exhausting, if reassuring. While the ritual was proceeding, a long string of women appeared bearing torches of palm leaves, and under this illumination we collected out of the boat all the various articles needed for the night and for the next day's work, to be carried up to the mission hut that was to be our camp on the airy crest of the hill above us. As on the other islands, we were not permitted to carry a single thing ourselves; theodolite and cooking-pots, sextant and axes,

provisions and field note-books, bedding and water-breakers, there were carriers for each.

It was nearly a mile to the rest-house, and so strange and picturesque a scene can scarcely be imagined as our advance along the winding path, unusually wide for a bush-track, escorted by the laughing, shouting, delighted natives, our immediate path illuminated by the wildly flaring torches of the women ahead and behind us, and, closely surrounding all, the thick mystery of the dark woods.

Tom had charge of the "house b'long miss-naree," and on arrival we were shown into it—a plain wooden-framed house, containing strong camp furniture. Supper was prepared in no time, and eaten in even less. It had been a hungry day. By ten o'clock we were all fast asleep, while outside there was blowing a sudden tropical squall, with an unusually fierce torrent of rain, the pelting of which on our corrugated iron roof made us weary seamen, remembering wet decks and anxious nights afloat when such squalls go sizzling by, wake merely sufficiently to bless the inventor of houses, and to rejoice that the land whereon they stand has been made so fast that it cannot be moved.

At daybreak a loud and angry booming close at hand throbbed into our slumbers,

and roused us all with beating hearts. It was the noise of drums. We opened the door and looked out upon the rain-drenched but now calm and bright morning, with the sun just rising on a fine day. The drumming ceased, and presently a clamour of voices reached us, as of a crowd of men all talking at once. I thought anxiously of war-drums, of an angry council of war on this remote island among savages smeared but thinly with a coating of Christianity, and as I thought thus the babel ceased, and there came to our ears a singing, mysteriously familiar, yet unfamiliar, in time that was unfettered and syncopated, in tune that was untempered and full of demi-semitones, agonisingly sharp, or excruciatingly flat, yet occasionally true—yes—by degrees it came to me, it was the poor tortured “Old Hundredth.” Four or five verses went by, and then a prolonged “A-a-men” trembled away into silence. Let us hope that *that* “great Amen” is lost for ever, anyway. I do not want to hear it again; no, not even “in Heaven.” Reassured by the well-known air, when at last I had recognised it in its jazz setting, I walked down to the schoolhouse whence the sounds had proceeded. Its position had been pointed out to us in the dark the night before, and now in daylight it appeared as a large, open-sided,

thatched shed floored with coco-nut leaf mats, in which the whole village, to the last child, was engaged at morning prayers, led by Tom on a sort of raised platform at one end. Each person had a Bible, or a prayer-book, or a hymn-book, and young men and maidens, old men and children, to say nothing of old women too, each one was reading aloud from whatever book he or she possessed at the very top of his or her voice.

These were the "confused sounds without" that had followed the early drumming, and had caused some moments of anxious wondering. As to the drums themselves, it appeared that they had "taken the Book" as well as the rest, and had now been diverted from their former heathen duties into being a peal of bells to call good folk to church. Every village has a set of drums, originally for war purposes, for signalling, or for dances, and, under missionary suggestion, they come in handy for this entirely foreign purpose. But I daresay that the converted drums, remembering the echoes of the good old, bad old, high old times, find their present use a bit too much like tub-thumping, and think it is fully time they began to decay away.

I spent nearly a month on Tongariki, with weekly visits to the ship to report progress

and to replenish my stock of "*kaikai* b'long white man," but as a fact we lived largely on fresh food bought from the natives—vegetables, fowls, even an occasional sucking-pig or a kid of the goats, and there was fruit, such as bananas, pawpaws, and bread-fruit for the picking. Led by Tom, and followed by a strong gang of workers from the village, we climbed the steep peak of the island. Arrived at the summit, axes—"akkus b'long man'wa'"—were handed out to the much amused natives, and before our faces had ceased to stream, or our lungs to draw steadily, the splendid trees that covered every foot of the land would be creaking and bowing and falling over in every direction, the topmost ones on the branches of the next tier below them, scattering disregarded orchids and mosses and ferns everywhere round.

Amidst the crashes of falling timber, and rejoicing shouts from the axe-men, the sea horizon suddenly became visible and the summits of the surrounding islands of the group, both those already visited, and known by their red-and-white flags as being under our subjection, and the others, unvisited and therefore still decently covered by the virgin bush of some centuries of growth.

Besides hill-climbing for theodolite work on the cleared summits, there was even more

exhausting climbing, with sextants and other paraphernalia, round the coast-line of the island. In most places the coast was fronted by towering volcanic cliffs five hundred feet high, with a narrow beach at the foot, thickly strewn with enormous boulders of black lava fallen from above. Round and through the intervals between the boulders the surf boils and swishes, and getting past them was often perilous as well as being most exhausting. Here and there along the bases of the cliffs there was foothold for a fringe of trees, and, disturbed by our noisy scrambling, myriads of flying-foxes, suspended in sleep under the branches after a thick night of fruit robbery and debauch, would unhook themselves, and flop blindly overhead, wheeling and screeching.

Though the work was stiff and strenuous, the time ashore on Tongariki was pleasant enough. I have a passion for "curios," and the island proved to be a very prolific hunting-ground. When "taking the Book" by the inhabitants put an end to warfare, their hatchets were not buried, but were stowed away, together with spears, clubs, shell-axes, and other delights, in the thatch of the owner's house. After a little one knew exactly where to look for them, and how much "trade" should be paid for them. My collection made at that

time, ghosts of a dead savagery, have now, after a purgatorial interval, achieved their heaven in a museum. That is the true destiny of "curios," but the realisation of this fact does not immediately dawn on the young collector. When his cabin has become so choked with clubs that he is obliged to sleep on deck, and when the spaces between the beams overhead in the ward-room have become so crammed with long spears that meals are no longer endurable owing to the still adherent native smells, and to the million cockroaches that come to live among the wooden weapons, the natural impulse is to pack them all up and send them "home." Perhaps he may have hopes that they will be welcomed there and hung up as an adornment in "the hall." If so, when the collector follows his collection at the end of the commission, he must be prepared for disappointment. The precious and difficultly obtained spears, clubs, poisoned arrows, carved idols, and painted skulls, at first objects of horrified interest to his untravelled relatives, will now be found to have become objects of loathing and of terror, exiled to lofts or cellars, and covered with dust, which every one is afraid to wipe off "for fear of getting poisoned" or other squeamish reason, even that possibly of insulting a South Pacific

ghost. No longer "curios," they will have arrived at the stage when they are referred to by (once proud) mothers as "rubbish sent home by the boys," and accordingly have been relegated to the lumber-room. The young collector will therefore find it more satisfactory to send his treasures, properly labelled, straight to a museum. There they will be perennially appreciated and displayed; there they may be hideous, and it will be gladly endured. They may be poisoned, and the curator will cherish them the more. They may be indecent (as is frequently the case), and yet they will bring neither shock nor even ribald amusement to the cold mind of Science.

. . . . .

At about ten miles from the Shepherd Group is the island of Mai, or Three Hills Island, as, for the simplest of reasons, it was named on the older charts. It is twelve miles long and two miles wide, and its three green hills are all of them over two thousand feet high. Ten years before the date of our survey it had achieved renown as the most "dangerous" island of that part of the New Hebrides. Conditions were now exactly the other way; and when Mr Michelssen, the missionary who had lifted these people out of savagery, invited us to witness the installation of a new chief in

one of the districts of the island, we accepted without a qualm. Chieftaincy in the island, he told us, was hereditary, and they have the very sensible custom that when a chief feels he is getting too old for his job, he first instructs his successor in his duties and then resigns, and hands the government over to him before he, the old chief, dies. On this occasion, however, the chief had died suddenly, leaving as his successor a boy far too young to be in charge of the district, and a "regent" had been appointed.

It was to witness the installation of this regent that we were invited. Makáti was the name of the village at which it was to take place, and we arrived from the ship at about 11 o'clock to find all the people collected outside the church, which was also the schoolhouse. This was a large thatched mat-walled house, furnished with rows of thick, clumsily hewn planks as benches, and having a raised space at one end, where the actual ceremony was to take place. The schoolhouse stood in the midst of a semi-wild garden of coleas, crotons, and dracænas, and its interior was decorated in the best white-man style, with garlands of coloured leaves and with masses of scarlet hibiscus blossoms.

About three hundred people trooped into

the house before us, all in their best cal'co: the men shortly, yet decently, in plain white or plain red waist-cloths; the ladies, on the other hand, in long "shimmies," blazing from neck to heel with the wildest floral fancies of Manchester. A dusky shade behind the rather too transparent feast of colour proclaimed to the observant that a compromise between fashion and temperature was effected by frocks *et præterea nihil*. One young lady, evidently a returned "Queenslander," proudly exhibited the modes of a bygone day, for she was tightly corsetted and largely embustled, the latter extension being a quite unnecessary amplification of the already sufficient gift of Nature, while on her head was an enormous straw hat, obtained who knows how, brilliantly and artificially beflowered. There were five of us from the *Dart*, and to each of us was allotted as a partner a chief from one of the other districts of the island, and as soon as all the company was settled in their places we entered the schoolhouse in pairs, in procession. We walked hand in hand, and it felt as if one was taking some one in to dinner. I could not help thinking how, not so long before, the old chief, whom now I was "taking in," would have taken *me* in to dinner in a more intimate and conclusive fashion.

We took our allotted seats, while hymns and prayers were sung and said respectively, and then came the "coronation." This was simple but effective. The young man who was to be the new chief was led (very shy) into the middle of the platform before all the people, and the missionary asked if there were any dissentients from the choice of this man as regent. None. Then a fine-looking old savage who represented the dead chief came forward. He touched his eyes with his hand, and placing it on the new chief's head said, "Be thou Ti Makáti. God help you." Makáti was, as I have said, the name of the district; and henceforward the new chief would be known by his territorial title, and would not resume his own name until relieved in the chieftaincy. After this the newly made chief and all the others of the island stood in a circle with joined hands in token of island peace and unity, and the missionary standing in the middle said a short prayer. That was the end of the ceremony. Handshaking and congratulations all round followed, and then came the banquet.

On our arrival we had noticed a large low mound of earth outside the schoolhouse, which seemed to be steaming slightly. We white people were now led forward to stand round and watch the opening of this mound, which

turned out to be an earth-oven. A hole about four feet long and two or three broad had been excavated in the ground and filled with grass and wood as fuel, interspersed with large lumps of stone. The fuel was lighted, and the fire kept going until the stones were red-hot, when the fire was removed and the stones arranged over the bottom of the pit. Large green banana leaves were then laid thick on the stones, and on top of them a sucking-pig and several fowls, each wrapped in a pudding of pounded yams, coco-nut, and taro, known by the well-invented name of "lub-lub." More leaves were laid over the top of the puddings, and over them again a layer of earth. Then water was poured into the oven through chinks at the sides, thus producing a sort of fierce Turkish bath around the leaf-wrapped food.

I do not know how long it took to cook, but the excellence of the result was beyond all praise. We were exceedingly hungry, and when a portion for each of us had been laid out on a banana leaf on the ground, we were glad to be told not to wait for knives and forks. Without shame or hesitation we were just in the act of "laying in" to our portions, when Mr Michelssen, who was standing near, hurriedly said grace, thus saving the white faces of us wicked sailor men, who had entirely

forgotten that "a blessing" would be necessary on such an occasion, picnic though it had seemed to us, in this tremendously Christian land.

Seldom have I had so good a meal, or one so well cooked.

There were other ovens, much larger than ours, in which eight large pigs had been cooked for the rest of the coronation party, but we did not wait to see this big fella *kaikai*, as the rain had suddenly begun to fall with the usual uncontrolled vehemence of the tropics.

Suitable offerings—mostly of old clothes and uniform—having been made to the new chief, and graciously accepted, we splashed back to the beach along the bush-track, now become a chain of deep mud-puddles under the dripping trees, and thence on board again.

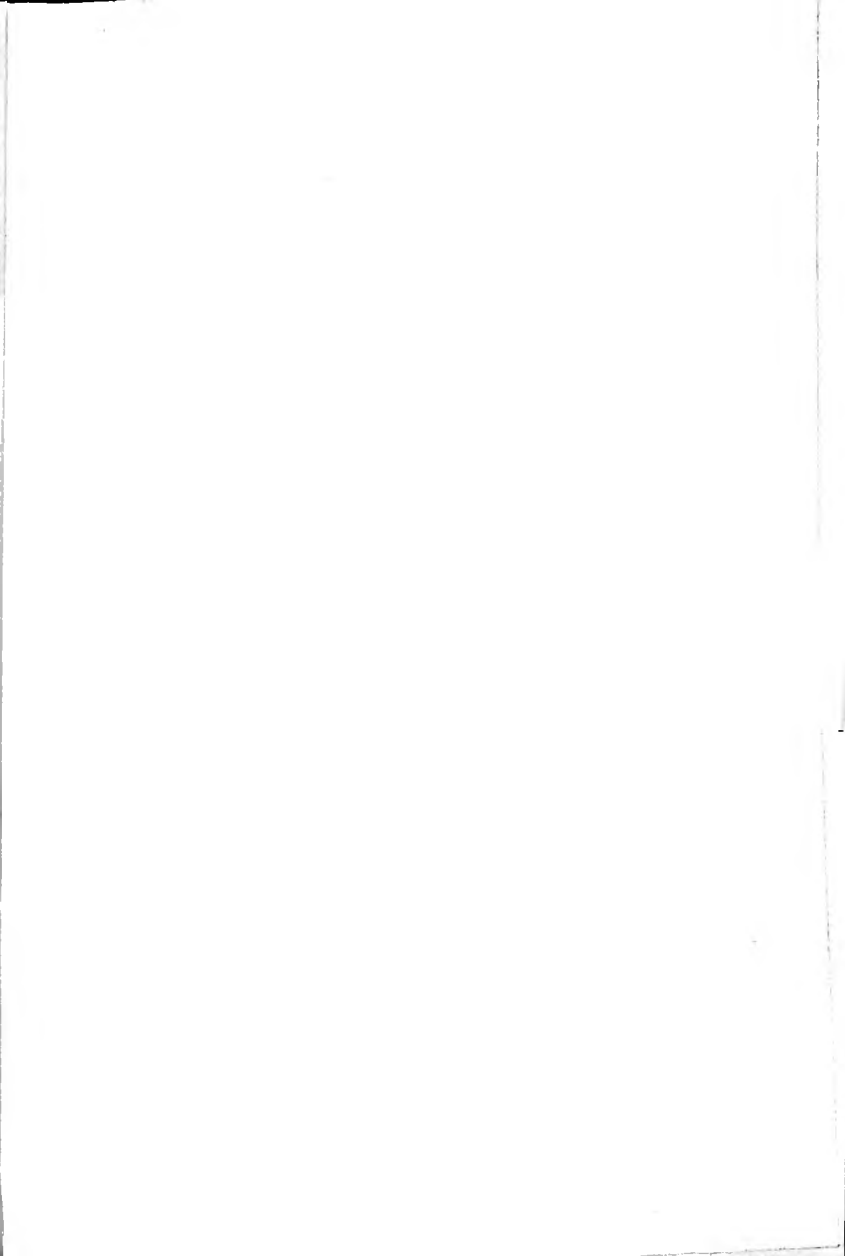
## CHAPTER VII.

## MALEKULA : FIRST DEALINGS WITH SAVAGES.

WHEN the work in the Shepherd Islands was finished we left that group with considerable regret to begin a fresh survey on the east coast of the large island of Malekula, at a harbour named Port Sandwich. The distance between Tongoa island and Malekula is only sixty miles, but if they had been separated by half the globe the contrast between the conditions of life in each could not have been more strongly marked. We found ourselves suddenly thrust out of what almost might have been called "civilisation," and certainly out of "peace," into the darkest savagery and incessant war. If Christianity produces mutual trust and friendliness between whites and blacks, as in these wild islands emphatically is the case, the hydrographic surveyor, to whom such conditions are essential to the carrying through of his work, must, as emphatically, throw in his lot with the missionary who has brought them

into existence. In the islands trade follows not so much the flag as the missionary, and one of the most important of the reasons for which sea surveys are made is Trade. It is true that the "traders" have usually got to an island before the clergy, but, in spite of their name, they scarcely represent trade with a capital T. They are there for copra, and not for conversions. They sail along the heathen coasts pluckily enough in their schooners, getting a string of copra here, a string there, while some few are precariously established in "Stations" ashore at certain points, where they usually live with their fingers on their gun-triggers, and never free from suspicion of their neighbours. It is not petty "trading" of this kind, however, that initiates Trade in any real sense, but the general settlement of the natives of an island in habits of peace. It is undoubtedly the missionary who originates these habits, and in his wake come coco-nut plantations, houses, roads, piers, and ship commerce, by which the natives as well as the white invaders are benefited.

In Malekula at the time of our survey the missionary was only just beginning, and had as yet made scarcely any impression; the island, rich and beautiful, was still in its sins. This we discovered on our arrival at Port





NATIVE SHOOTING FISH, PORT SANDWICH, MALEKULA.

Sandwich, for we found ourselves immediately involved in the protection by force of arms of the French trading station there from attack by the surrounding natives. We began our work with the landing of armed parties instead of surveying parties, and with the manipulation of rifles instead of theodolites. Luckily we knew the uses of both.

Port Sandwich is on the south-eastern coast of Malekula. The harbour, an excellent one, is long and narrow, lying between the slopes of the main island and a hilly peninsula, covered with thick bush, projecting from the coast, and lying parallel with it.

Dense forest reaches down to the water's edge on both sides of the harbour except at one point, where there is an area of low, flat, sandy soil, shaped like a triangle with its apex in the harbour.

It had been cleared of trees, and on it stood the French "station," with a small coco-nut grove and some cultivation, all protected from the adjoining bushland by a high stockade.

The best anchorage is opposite the station, facing a pleasant sandy beach. At about two miles away, near the head of the harbour, there is a small stream running in, and at a short distance up the stream is a tiny native village, a hamlet bearing the name of Navunk. In this

village the head of the French trading station had placed a man, a *libéré*, as a kind of agent to collect copra from the surrounding natives, and to bring it in from time to time to the station. He had not long been established before he got into trouble with the villagers; probably he had *cherché* too assiduously *la femme*, or possibly *les femmes*. That was never known for certain. But one evening, when he was sitting having his meal in the cool outside the door of his house, *lex talionis* fell on him in the shape of a club on the top of his head, and whatever brains he possessed were thereby distributed over the table at which he sat. Reprisals by the French had followed, and when we arrived at Port Sandwich, it was to find the place in a state of war, which, with our previous island experiences, was for us a new and most troublesome condition of things. From the many hidden villages in the bush on both sides of the harbour there was coming the deep noise of drums. It went on day and night, and at all kinds of odd moments. The French trading staff were naturally nervous, being largely outnumbered by the natives, and were patrolling their stockade, letting off rifles in reply to the drums at even odder and more frequent moments, as funk or fancy dictated. Upon the quite un-

expected arrival of the *Dart*, our armed assistance to protect the station and its defenders was urgently asked, and a "landing party" was immediately sent off, of which I was put in charge. Having posted armed bluejacket sentries to replace the Frenchmen on the stockade, and made further military dispositions, one of the first things to be done was to visit the scene of the murder, and make such inquiries as were possible.

The little village was quite deserted when I arrived with an armed boat's crew, but the fires still smoked on the hearths, and a few pariah dogs, sniffing our unfamiliar wind, barked miserably, and hid, complaining, behind their owners' huts, so that it was evident that the inhabitants were not far distant, but were merely hiding in the thick surrounding scrub, nervously, guiltily, yet safely, thence regarding man b'long man'wa', and wondering what he would do by way of "punishment." On our side, the certainty of the presence, though unseen, of an unknown number of savages was not very comfortable, for every one of them in all probability carried a "musket." Not very deadly weapons, it is true, except to the daring person who might obtain ammunition and fire one off, for the cost of them at the French store was twelve francs, and they were bought

wholesale in Australia at 3s. 6d. each. Still, every bullet has its billet, and, apart from that, when the ammunition has come to an end, a Snider can easily be converted into a club, and in the hands of a Malekulan become a much more certain and formidable weapon than before.

There was the Frenchman's hut, and there, outside the door, was the table and the kerosene box on which he had been sitting having his meal when he was murdered. There were abundant bloodstains everywhere, and all around were other horrible evidences of the crime.

The body had disappeared, possibly to be distributed throughout the bush neighbourhood for *kaikai*—not so much for mere cannibalism, as ritually, in order that the white man's courage and (with any luck) his skill in cheating might be assimilated by the partakers; for such is the pleasant belief and custom of Malekula.

Nothing could be done except to make notes. No questions could be asked, for there was, apparently, no one to give replies, and I ordered my armed party back to the boat, which was lying in the stream by the edge of the village a few yards away. I waited to see them go, and then, surreptitiously, I put a good bundle

of trade tobacco on the tragic table, and rejoined my forces at the boat.

I suppose I ought to have burnt down the poor palm-leaf village, and cut down all the coco-nut trees. That was the method then in vogue for "punishing" these wild creatures. Little inquiry was ever made into any provocation the natives might have received; and it was always assumed that they were in the wrong, and must be punished. But I didn't "punish." Probably the defunct *libéré* had received a long-due reward; and anyway it seemed certain to me that he had not been tomahawked for nothing. My pound and a half of peace-offering was intended to convey an acknowledgment of this, and it was not without a view also to future amicable contact with the natives of the district when our survey should begin that I deposited it there. Pusillanimous, perhaps, but it had its due effect, as the existence of Admiralty Chart No. 1736 now justifies.

Without that handful of "tambak," it might never have been engraved, or at best its original could only have been produced under most troublesome and "armed party" conditions. Shortly afterwards the French man-of-war patrolling the New Hebrides (as their share of the Franco-British condominium of the Group)

appeared on the scene, and our captain thankfully turned over to her *Commandant* the whole affair, to take whatever reprisals he wished to take. By that time the noise of the drums had died down, and things had become almost normal (the tobacco, again, as I still think), and the French captain wisely abstained from stirring up the now no longer buzzing wasps' nest. He knew quite well what the New Caledonian *libérés* were like, and I expect that contemplation on the probable character of the murdered man weakened the hand that bore the rifle, the axe, and the firebrand of White Justice. No punitive measures were taken, to our immense relief, for now we were able to make some sort of start at our work.

I have mentioned this affair chiefly to illustrate the amazing contrast that existed between the fully Christianised islands, among which our survey hitherto had been laid, and the entirely heathen islands, such as Malekula, each island inhabited by the same brand of humanity, on the same level of intelligence. In Efate, and particularly in the Shepherd Group, we could, and did, go about our work as securely as in any civilised land, visiting any point we desired to visit, and sure of getting native assistance when wanted.

In Malekula the whole feeling was different.

It would have been most imprudent to have landed without carrying some sort of weapon of defence, and there was suspicion on both sides, on ours as well as on that of the natives, even after they came to know us and our work. It was more exciting perhaps, but rifles and pistols were decidedly a nuisance to carry when one was setting up marks along the shore, or coast-lining, and especially when it was necessary to climb a hill covered with bush, in order to get theodolite angles at the top. As to getting natives to guide us through the bush or to clear the summits of trees, that was an impossibility. There was a French Marist Mission station not far from Port Sandwich which then had been established for about two years, but without any visible result on the surrounding natives. Père Douceret, who was in charge of it, was a friend of ours, and a man of great charm and distinction. He regarded without any false hopefulness the wild sheep that he was expected to gather into a Christian sheepfold. They responded not at all to his advances, charm he never so wisely.

He lived in a wooden-frame house by himself in the middle of the bush, and in the same building were his school and little chapel. He told us it was almost impossible to overcome the suspicions of the natives.

In the first place, they could not understand or even believe it to be possible that any man could live celibate. They were convinced that the missionary must, of necessity, be interfering with their women, and prudence consequently commanded that never, never must he speak to one of them. The whole female sex of the district was thus debarred from conversion. Again, being a Frenchman—"man-ouioui,"—it was considered that, being of the same race, he must have the same instincts as the *libérés* attached to the trading station, whom they knew only too well. Accordingly, no male native would come unarmed into the Mission station enclosure, while on the other hand it was the law with Père Douceret, as with every European in every wild island of the Pacific, that rifles and clubs and spears must be laid down by visitors at the gate of any "place b'long white man." It is the most ordinary precaution of common-sense. As no Malekulan man would do anything so risky as enter a French establishment unarmed, the male sex, like the female, remained unconverted also. The missionary's only chance, therefore, was with the little children; the smallest boys and the very tiniest girls. A few of these had been lured into "school," but it was slow, uphill, and disappointing work

for a man of Père Douceret's ability, and we were very sorry for him. He gained some "man'wa'" prestige through our friendship, for the natives soon found out that we who visited him were *white-man*, and not *ouïoui*, so that he gave us a genuine welcome whenever we appeared. The Marists are self-exiled for missionary work, but still are open for "promotion," and I have heard since that Douceret became a bishop, and governed the Mission de St Louis in New Caledonia. Well and truly he earned that position.

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During our survey of Port Sandwich there was an interval of about a week when it was impossible to leave the ship for any sort of "fieldwork," either ashore or in boats, on account of rain. "More rain, more rest," is a well-known hydrographic maxim, but it means rest only from work in the open, with sextants and theodolites, for there is always plenty of bookwork connected with tides or "sights" or other calculations to keep one busy under cover, and besides, there is generally some "plotting" to be done on the great sheet laid out on the chart-room table. On this occasion the rain descended in a solid sheet of warm water for forty-eight hours without a break, and this was followed by heavy rain-storms

separated by short intervals of cessation for the following four days. It rained and rained.

In no part of a long tropical career can I remember such an incessant and such a tumultuous descent of water from the sky. Unfortunately we had no rain-gauge set up at the time, so that the actual amount that fell cannot be stated in tons to the square inch, but it was sufficient to cause the whole surface of the harbour, to the depth of several inches, to be fresh and even drinkable water, and so to remain while the tide rose and fell during the first three days of the downpour. It did not become properly salt again until several days later. The visitation of fresh water began quite suddenly, but the weather took some time to settle down again into ordinary conditions. When at last the sky cleared, a small trading brig came into the harbour, and from her skipper, an Englishman, we learnt the quite unmeteorological origin of the rainfall, and the reason of its long continuance. The brig had come across from Ambrym, another of the New Hebrides islands, about fifteen miles away. Ambrym is a big lump of an island, triangular in plan, with each of its sides twenty miles long. Its central part is from three thousand to five thousand feet high, and is occupied by a vast crater-plain, now a field

of ashes, ringed round by peaked summits, many of which are active volcanoes. There was a tremendous eruption along the western edges of this crater-rim in 1894, when several streams of boiling lava came flowing down the steep side of the island to the sea, carrying before them in crashing flames the great forest trees that lay in their paths. The sea is very deep close to the coast, and the molten lava poured into it over the rocks with the noise of thousands of large boilers whose safety-valves were all lifting together, roaring and hissing, while the steam rose from the suddenly boiled sea in a dense white column twenty thousand feet high. In spite of the uncertainty of existence in such a region as this, there are many bush-villages round the upper slopes of Ambrym, the natives of which, who are, of course, "man-bush," are regarded by the coast dwellers, the "man b'long saal-water," with a superiority that is beyond scorn, and is, in fact, similar to that with which a white person regards an Australian black-fellow.

There had been no rain in Ambrym for a good while, and the yams and sweet potatoes and bananas, the main support of "man-bush," were in such a bad way from the drought that it looked like famine ahead of them. The services of an eminent rain-maker were accord-

ingly invoked, and terms having been arranged, this man of power commanded that the branches of a certain tree, known to have good rain-producing qualities, should be cut down. He wove these into a kind of framework resembling a hurdle, which, with the correct ritual and incantations, he laid at the bottom of a deep hole in one of the water-courses, now dry, that ran from the hills above down to the sea. The hurdle was then loaded with large stones to keep it in place. Thus compelled, down came the rain, and with such vigour that the dry gully soon became filled with a roaring torrent of water, and the deep hole, with the weighted hurdle at the bottom of it, was filled by a foaming flood. Presently there was altogether too much of a good thing, but the rain was unable to stop while the heavens-controlling hurdle lay under enchantment—and heavy stones—at the bottom of the water-hole. No man in the bush villages knew how to dive, or even how to swim—it was indeed a glaring instance of the contemptible inferiority of “man-bush” in all dealings with water,—so that no one could move the stones and allow the hurdle to float up and be removed. Accordingly the rain continued, heavily and incessantly. Soon it seemed as if every garden in the island, not merely those up-country but those on the coast

as well, would be washed away, yams and earth and all into the sea. There was nothing for it but to send a deputation down to Vato, the nearest village on the coast, to explain what had happened, and to implore the aid of a skilled diver.

The salt-water people were themselves beginning to wonder if anything in the man-bush magical line were happening up there in the hills, and, on request, at once sent up a diving party (but under an ample safe-conduct, for you never know what treachery man-bush may not be up to). With great difficulty the mooring stones were removed from the bottom of the water-hole, and as soon as the tattered remnant of the hurdle floated to the surface, it was dragged up the bank and destroyed. Then at last the rain began to lessen; at first sullenly and reluctantly, as if slowly "coming to" from the spell of the rain-maker as one recovers from an anæsthetic, and then in shorter and lighter showers, until at last it definitely ceased.

The result of the rain-enchantment had been widespread, and reached across from Ambrym to Malekula, as we have seen, so that a large district rejoiced when the last "clearing shower" passed off, and the sun shone out once more. From this true tale we may see in what diffi-

culties one may be landed, in any attempt to interfere with meteorology. It should be a warning to those hopeful ones who expect some day to "control" rainfall in these other islands. It may end literally in a "wash-out."

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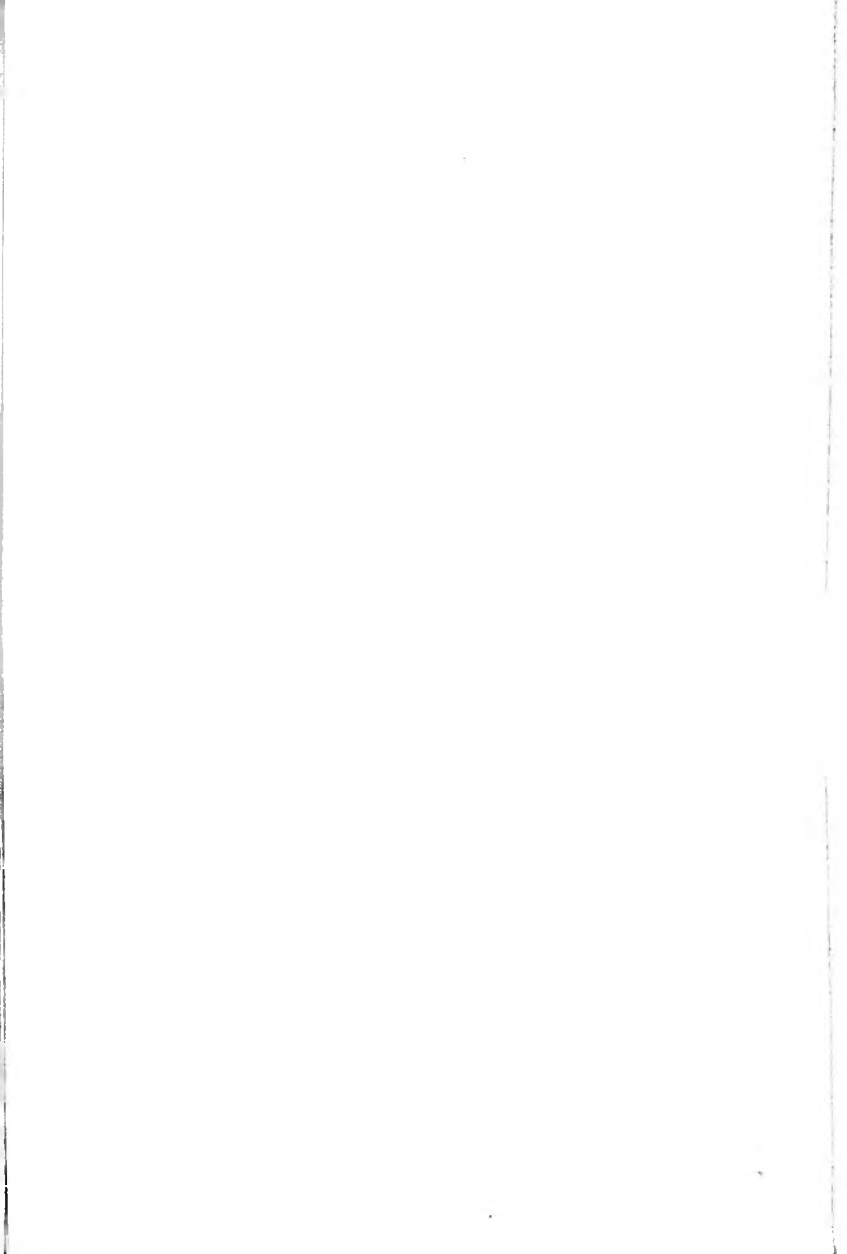
Our survey, begun at Port Sandwich, went northward thence up the eastern coast of Malekula for a distance of about thirty miles to another good harbour, named Port Stanley. The natives of the coast villages between these two points were just then in rather a turbulent state. We were told that this was nothing unusual, but it was very troublesome for us, though it was the French authorities and not the British against whom the natives were carrying battle, murder, and sudden death generally. The present disturbance had arisen in the following manner. Not long before a half-caste boy, whose father was some forgotten French *libéré*, was sent by his mother to gather coco-nuts. He was thus employed at the top of a tree when he was spotted by a native passing by, who was armed, as usual, with a Snider. Whether the boy was taking nuts that did not belong to him, or whether it was that he was fat and well-liking to the sportsman, or whether it was because of his close connection with *man-ouioui* was not known,

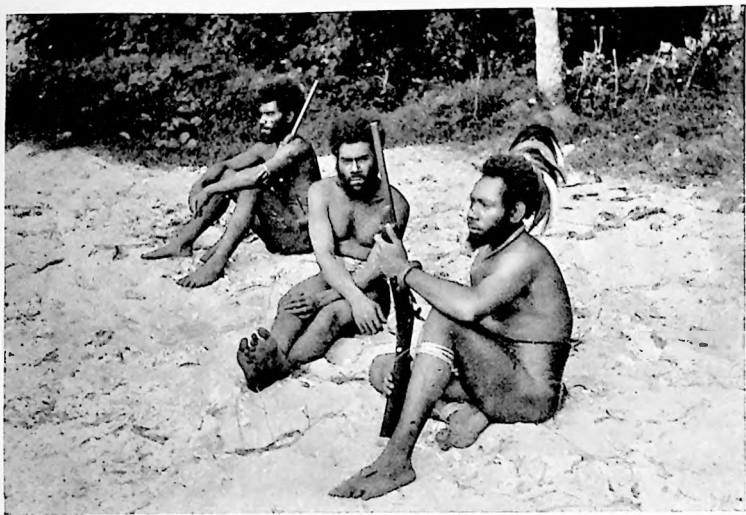
but whatever the reason up went the Snider, off went the bullet, and wonderful, if tragic, to relate down came about 100 lb. of long pig. When deliberate aim is taken by a Malekulan with a rifle, fatal accidents such as this are rare.

An earth-oven was prepared, and the hungry villagers disposed of the day's bag at nightfall. The disconsolate mamma, however, went off to the *Saone*, when next that ship was anchored in the vicinity, and reported the matter, so that an armed party went off from her to avenge the murder of the half-French boy, and the subsequent *kaikai*. As usual, the actual murderer could not be found, but they managed to collect one man, possibly implicated, as a hostage. They carried him off to Noumea in New Caledonia to have and to hold, and if necessary to shoot unless the real malefactor presented himself. The result was that French lives in those parts were at a premium, and in some degree the condemnation extended to the whole white race.

Shortly after our arrival off this part of the coast, and not knowing about this affair, I was walking along the beach, accompanied by a single bluejacket, peacefully engaged in coast-lining with a sextant and theodolite. The coast was bush-fronted, and apparently deserted.

There was no sign of a village anywhere near, and, already well laden with instruments and other paraphernalia, I had (very inadvisably under the circumstances) left our firearms in the boat. The boat was following me along the coast as I walked along it, but happened at the moment to be out of sight behind an adjacent point. Suddenly there appeared out of the bush a native carrying a Snider, and as suddenly he dived back again into it from the beach. We two, the bluejacket and myself, continued on our way, a little surprised, perhaps, but supposing this to be Malekulan manners. I continued taking angles, and he writing them down in my field-book, when presently there appeared, coming round a bend in the coast ahead of us, a second native also carrying a rifle, and walking nonchalantly towards us with an air of one to whom the appearance of a couple of white men in that neighbourhood was a common event, unworthy of serious notice. When he got near, I ventured on a "Good-day"—the usual salutation between ourselves and those of the natives who had been at labour in Queensland. Politeness always pays, and on this occasion it probably prevented a tragedy. The man addressed happened to be an ex-Queenslander, and by those two simple words recognised us to be "white-





THREE MUSKETEERS OF MALEKULA.

man" and not "ouiou." He returned my "Good-day," and then began to catechise me as to "Who man, you?" "Whatname you makeum?" "Where ship b'long you he shtop?" And having thus discovered who we were, what we were doing, next that we were "man b'long man'wa'," and finally that we had no means of shooting, except, perhaps, from a mysterious machine on three legs, he shouted into the adjoining trees words which were, I suppose, "All right, not Frenchmen, only two mad white-man from the man-of-war"; for instantly the bush fringing the beach abreast of us, which up to then had seemed unusually lonely and silent, began to quiver and to stir, and a crowd of men emerged from behind the glistening green front, all armed with Sniders, yet, counterbalancing this "civilised" condition of things, all of them savagely naked according to the really indecent fashion of nakedness of Malekula. Three or four of them who had been to Queensland came forward to "shak-and," which they did almost with the solemnity of the Christian islands, and to inquire for themselves what we were doing on this beach. It was difficult indeed to explain surveying operations in beach-lamar English, but it worked out something like this: "Altogidder man b'long man'wa'

he makeum bigfella likeyness alonga saal-water b'long disfella place. Bymbye ship he come, he lookeum, he savvy he no got shtonn (stones —i.e., rocks) along saal-water, him he savvy goodfella place goalong he come. O, bymbye bigfella ship, too much, he come this place." One man, who seemed to have been employed in a Government labour-brig collecting workmen for the Queensland plantations, took in this much-laboured description, and explained somehow to the remainder what I had said. Then they all had a look through my theodolite telescope, which occasioned huge delight and wonderment. They reached out with their hands as if to touch the rock on the beach towards which it was directed. It was a hundred yards away, but they seemed to consider that if the eye could be magically transported so near the object, the whole body must be also. "Tambak" was then distributed all round, and so in all love we parted.

They were told to pass the word round as to who we were, so that "altogidder man" should know what we were doing, and I believe they did so faithfully. At least, we never had any trouble subsequently, nor was any suspicion cast upon our doings.

We were always distinguished from the hated *man-ouioui* by our insane habit of hanging up

"bigfella cal'co," our mark-flags, at intervals along the coast. No Frenchman was similarly employed, and so by our works did they know us. "O Inglissiman, he goo-fella; Faranchi-man, he no blood-good." Thus the educated Queenslander. We became acquainted with several men from this part of Malekula who had been to Queensland on "labour." Having been lucky enough to have been recruited by a Government brig and not by an illegal "black-birdier," they had been returned to their native villages at the end of their indentured service. On one occasion we witnessed a labourer's return to a village near which the *Dart* was at work. A Government labour-brig arrived one Saturday to land this man, and to recruit any others who could be induced to go to Queensland. On the following day, while we were enjoying a peaceful Sunday at anchor, the returned labourer came on board to pay us a visit. He arrived in a native canoe with some of his friends, they practically naked, while he was dressed in a smart black coat, fashionable grey trousers, white shirt, red neck-tie, and a bowler hat. He looked most uncomfortable and hot. He had been away for three years, and had returned with a box filled with all manner of "trade," as well as the suit of clothes in which he appeared. These

represented the fruits of three years' labour, nominally about £50 worth, but the real value must have been considerably less than half that sum.

When we went on shore later we saw the box on the beach where it had been dumped by the labour-brig. The proud owner unlocked it and exhibited to us its contents, his earnings. On the following Wednesday we had to land at this same spot to take sun observations, and we were soon surrounded by a group of natives. Among them was our friend of Sunday, but barely (literally) recognisable from the remainder of his village mates, having now an entirely naked body and a face streaked with lime in the prevailing fashion—namely, in lines defining all the bony ridges and the curve of the jaw-bone. All that remained to him of his Queensland outfit was the red neck-tie, which, tied round the waist, easily supported the whole of his costume (if so it might be styled). I said to him, "Hullo, altogidder clo' b'long you he pinishy?" (that is to say, "Are your clothes all finished and done with?") "Oh yes," he replied, a little sadly, "altogidder him he pinishy. Altogidder man b'long pless (place) b'long me he takeum he go—he pinishy." It was thus always. Everybody in the village expected, and got, a "fairing," a "present

from Queensland." Three years' earnings were all gone in three days. Only the "trade" box—"bokis b'long him"—remained in his house, to be a receptacle for all sorts of rubbish, together with the relics of the now ruined *Nouveautés de Paris* and ridiculous toys that he had brought, which had been returned to their original owner by the breakers thereof, his friends, when completely done for. He was once more their equal in worldly wealth and status: a savage and a Communist.

## CHAPTER VIII.

## URIPIV AND THE MAKI FEAST.

PORT STANLEY, on the eastern coast of Malekula, was the terminal point of our survey in the New Hebrides as ordered. We found it to be a place even more savage, if possible, than Port Sandwich (where our work in Malekula had started), and not so good an anchorage. It was inhabited by the same variety of native, as wild and as unclothed. Here almost for the first time we saw the native women in their native attire—which, I may add, differed but little from their natal attire. At Port Sandwich those few women of whom one caught a flying glimpse, as they scuttled like frightened rabbits down the bush-tracks into hiding, were usually to some slight extent swathed in European cal'co, bought at the French store, though the material was employed chiefly as an ornament and not as a garment. At Port Stanley there was no trader, and there-

fore no cal'co, so that the costume was extremely *décolleté*. It consisted, in fact, of a scrap of finely woven matting with fancy drawn-thread work and a fringe at each end, the inclusive dimensions being forty inches long, and 10 inches wide. It was secured round the person in a truly remarkable manner. Seen from the front the upper edge of the matting petticoat—if petticoat, indeed, it could be called—was in line with the waist, but from that point the garment sloped steeply downwards to the back. How the matting maintained itself in this attitude I leave to other anthropologists more prying than myself to decide, but I think that the top point of the matting in front must have been attached in some way to the chain of beads that surrounded the waist of each woman, for it had no support behind. The costume must have been as uncomfortable as it was precarious, but evidently in Malekula, as elsewhere, *il faut souffrir pour être belle*.

Port Stanley is a harbour about seven miles long, and, like Port Sandwich, is enclosed between the main island and a narrow point of land running parallel to the coast. This point terminates to the northward in a long tail of drying coral reef, upon which, near its end, stands a small island named Uri. A

few hundred yards northward of Uri the reef ends abruptly in deep water.

There is a channel here of navigable water three-quarters of a mile wide, and then you come to a second small island named Uripiv, off which is the best anchorage in the harbour. There is a large village on Uripiv, and near it is the Presbyterian Mission station, which had been established a year or so before our arrival, at the special request of the inhabitants, and was in charge of a Mr Gillan.

As soon as the schoolhouse for the Mission had been built, it was immediately filled with what seemed to be a promising crowd of pupils of all ages, to the number of perhaps two hundred, but the interest and novelty of it all, and the prestige of becoming a cathedral city, with a resident white man complete, soon died in boredom, and by the end of a few months the attendance had dwindled to a possible ten. These may have been "conchies," for the forbidding of fighting by the missionary was one of the causes that drove the remaining one hundred and ninety out from "school." Except on general grounds, one wonders why he forbade it, for, according to his own account, it seems to have been a fairly harmless amusement. He told us of a "war" that he witnessed between Uri and Uripiv

not long after his arrival. Thirty braves went forth from Uripiv in canoes, hideously painted, and armed with clubs, spears, Sniders, and ammunition to murder and to ravish. They crossed the narrow strait to Uri, landed, and drove the enemy—men, women, and children—out of their village on to the wide reef that surrounds the island, it being low water at the time. Fierce was the fusilade on both sides (for all had Sniders), the range becoming less and less with the Uripivian advance, until at last, when the forces were separated by only thirty yards, it was found that the ammunition on both sides had all been expended. The people of Uri, who had been pressed back to the sea at the outer edge of the reef, then took the initiative with clubs and spears, and on this the Uripiv enemy rolled back sullenly over the frontier (as the history books say), sacking the village of Uri as they passed through it on the way to their canoes on the inner side of the reef. At this moment Mr Gillan arrived on the scene. He had started off directly he knew of the fighting, but he was as yet a poor hand at the single management of a native outrigger canoe, and he had with difficulty struggled across from Uripiv to Uri.

The shooting, the shouting, the howls and shrieks of defiance had ceased, and he knew

he was too late to stop the fighting, but he thought he would at least be able to give first aid to the wounded, and to prevent the cooking of the slain for *kaikai*. He might as well have stayed comfortably in his Mission-house on Uripiv. Not a soul on either side had been so much as grazed by a bullet or touched by a spear, and the two sides had never got within club-range. And that was the end of the war.

The difficulty of inculcating even the beginning of civilisation into these savages may be gathered from the fact that there is in their language no word or paraphrase by which the ideas of either "pity," "shame," or "gratitude" may be expressed. Their cruelty almost passes belief.

For example, old men are almost always buried alive, when it is considered that their time ought to be up, and they have become, in consequence, *de trop*. Not long after Mr Gillan had been established on Uripiv he got information that an old man of his acquaintance was thus about to be disposed of. The unhappy greybeard had been told simply that he was "for it," and his friends and neighbours were invited to the funeral feast. The missionary accordingly went down into the village to stop it. Cowardice is one of their most marked characteristics, and though, as one may imagine,

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the natives could easily have added baked interfering missionary to the funeral feast then preparing (for Mr Gillan was at the time entirely unsupported by the presence of "man'wa'"), yet, determined and fearless, the missionary was able to insist that the old man, their promised victim, should be allowed to remain above-ground. However, though unburied, he was considered as "dead." His food ration was stopped, and even his own son, who, in spite of his father's continued existence, had stepped into the proprietorship of the family yam patch, assisted in the starvation process. Mr Gillan accordingly himself carried food to the living dead man every day for five months, and thus assured himself personally of his still being above-ground. Then came the time of the Mission Synod. Mr Gillan had to leave to attend it, and did not return to Uripiv for a month. He left his pensioner in charge of the two native Mission teachers to feed and defend during his absence, but in spite of this he found on his return that the unfortunate old man was dead and buried—perhaps it would be more correct to say buried and dead, in that sequence. The prestige of the black teachers had been insufficient to prevent the horrible tragedy from happening. Living burial is prescribed for the aged not

necessarily on account of feebleness, nor because the victim has become in any way a burden on the community. There was another case in which the unwanted man had been buried alive no less than three times, and on each occasion had been vigorous enough to resurrect himself by pushing away the earth under which he had been laid and reappearing in the village. However, he still was reckoned to be a dead man, if a *revenant*, and he was denied food by his bereaved relations, so that, weakened by hunger, the fourth burial was too much for him, and he reappeared in the world of men no more.

Close to the Presbyterian Mission-house on Uripiv was the heathen "Emil" or dancing ground. It is true that the natives had themselves asked that a missionary should be sent to them; but when the request was granted, and Mr Gillan and his "schoolhouse" had been installed, the unexciting hymns of Christianity and the hot dull "pless b'long misnaree" had no real chance against the adjoining Emil, open to sun and breeze, with the thrilling music of its drums and the delightful dances of heathenry. On seeing and comparing the two places of religious assembly, one could scarcely wonder at the general return of the natives, after a short trial of Christianity, to

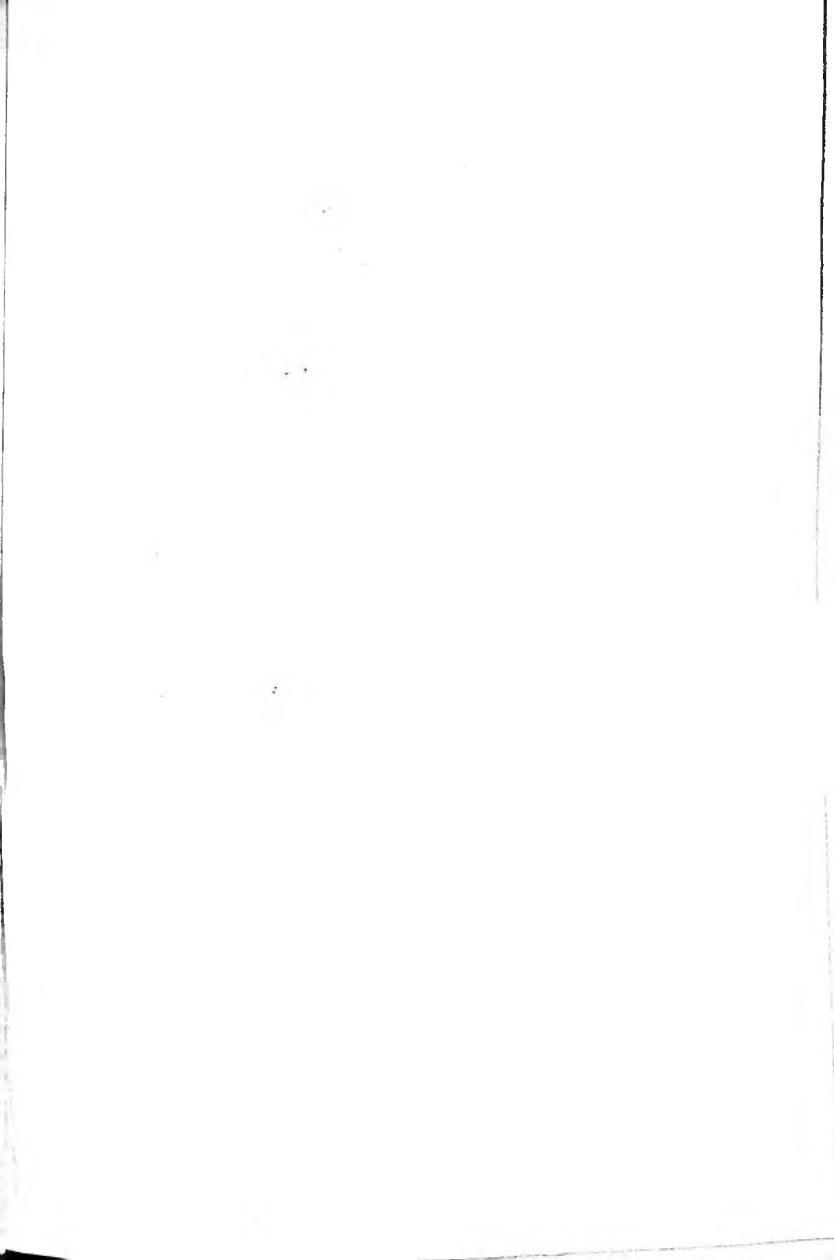
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the feasts and fights and dances with which their previous life had been brightened.

It chanced that we were able to judge for ourselves as regards the feasts and dances; for while we were waiting at Uripiv for a spell of bad weather to go by and permit us to take some "sights" needed to complete our survey there, a "Maki" was announced. This was a native festival which took place only once in every three years or thereabouts, and there was to be a large gathering to it from all the adjoining parts of Malekula. For once in a way we blessed instead of cursing the bad weather, since it gave us an opportunity of seeing dancing and other functions that can seldom, if ever before, have been witnessed by white people.

The dancing ground or Emil, where this great affair was to be held, is one of extraordinary beauty and interest. There was a canoe landing-place in the harbour for visitors from other parts, from which a short bush-track led to the ground, and the entrance to this path was distinguishable, as seen from the water, by an immense "Kanakaka apple" tree growing at the edge of the beach. It was in full flower at the time, and covered with deep pink blossoms something resembling in style (though not in colour) the flower of St John's Wort, but larger, and the ground beneath

the tree was bright with the shed tassels. By-and-by the tree would be covered with a shiny fruit like a highly-coloured apple made of wax, not unpleasant to eat, with a sharp delicate juice. Starting from this point the path wound along under immense forest trees, and was edged with coleases and crotons of every hue from deep crimson and brilliant yellow to pale green and creamy white, with every here and there a tall stiff dracæna, bearing aloft a great tuft of scented lilac bloom. At the end of about a hundred yards was the Emil. It was a space in the forest, large and open, of flat brown earth whereon a hundred men could dance, with room for many hundreds to stand round as spectators. It was pillared round by the brown trunks of trees, and, except in the central part, was roofed with their interlocking branches. Shafts of afternoon sunlight came through the spaces between the pillars, so that the frieze of crotons which surrounded the dancing floor was alight with colour at some points, and smouldering dimly at others. As the sun changed its angle of light, so moved along the illumination of the wings of the stage. There were several special entrances for the performers at points between the trunks of the trees that framed in the Emil, but the most impressive of these was





STONE ALTARS AT URIPIV.

at a place where an enormous banyan tree had established itself in its usual selfish manner, ever staking out new and quite unjustifiable claims by thrusting down its parasite suckers into the rooting places of its neighbours, and absorbing their proper nourishment until they died of anæmia. The beautiful result was a wide space like a hall, roofed with glossy leaves, and divided into corridors by pillars of white and sinewy boughs or aerial roots (whichever they may be). A large crowd of dancers could stand concealed in its shade, and emerge with great effect through these corridors on to the stage for their "turn."

Around one side of the ground, backed against the trees, were the altars of the ghosts of the dead. In some cases these consisted of a large stone table supported on other stones, and backed by a "reredos" of another large flat stone, having painted on it a device that seemed to represent a crescent moon. Generally there was a high thatched roof erected over such an altar. Other altars were merely open tables with neither reredos nor roof. Adjoining each altar was its *demits*, or representation of the dear departed. This consisted of a tall tree-fern trunk carved with a long triangular face, brilliantly coloured, grotesque, and hideous beyond words. No

wonder that the sad ghosts, beholding such caricatures of their dead selves, needed propitiation with many pigs. This some of them had evidently received, for at one point there was a roofed space sheltering several *demits*, and behind these figures, neatly secured in several rows, were (literally) hundreds of the jaw-bones of boars, with the great curving tusches still in place, some of them so long as nearly to be circular. They provided incontrovertible testimony to the piety of the descendants of the *demits* and such as could be called up in their favour on any attempt of the ghosts to "walk" and terrify the living. Near the centre of the Emil were the drums. These, as usual, consisted of the trunks of large trees hollowed out, shaped something like a dug-out canoe, with roughly pointed ends. They are of all sizes, but usually about ten feet high, and are planted standing in the ground in a roughly circular group of a dozen or more. There is a long slit cut down one side, and the top is embellished with a large face of forbidding aspect, much the same in appearance as that of a *demits*. When beaten with a wooden club these drums give forth a sound, partly solemn, partly disturbing, wholly archaic. Each has its own deep note, which on a calm night may be heard for as much

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as seven miles over the sea. Round the foot of the great drums there are often lesser drums lying lengthwise on low supports, so that they may be beaten by small boys squatting on the ground before them. An orchestra of drums dealt with by a company of artists can stir you according to the intention of the music (for music it is); if for war, to the most daring deeds of clubbing on the head an unsuspecting enemy; if for feast, to the most agile and mysterious of dancing; if for religion, to a fervour that finds vent in the sacrifice of many pigs.

The Maki, the great feast itself, was arranged to begin fairly early on a certain morning, but there was to be a prelude of dancing and drumming at nightfall on the preceding day, and we determined not to miss any of it. Just as we landed from the *Dart* the rain, which had been threatening all day (and had thoughtfully prevented us from taking the "sights" of the sun that were required, and thus kept the ship in harbour), came down in a sudden and terrific downpour out of a cloud so inky that one almost expected the water that fell from it to be black as well.

There was no moon, and the darkness under the great trees that surrounded and partly covered the Emil was that of the nethermost

pit. We had to keep in close touch as we groped along in single file, drenched to the skin. The drums began while we were still in the bush-track, and as we arrived on the ground there burst forth out of the thick blackness a howling chorus, having in it notes both of fear and of menace. It sounded like a hundred lost souls bewailing their fate, but still impenitent. Suddenly there were gleams of light, and through the fast splashing rain there came gang after gang of wet, black, naked men, each one bearing a torch of fiercely burning reeds and leaves, that must have been soaked in oil to keep alight in such weather. Each gang swung swiftly round the booming drums, howling and prancing in time to their music in a fierce passionate dance. As they swept past us, the torch-lights they bore showed them where we were standing in our white clothes, grouped at the edge of the ground out of harm's way.

As soon as they realised that we were present, the word was passed round *dosalsal*—i.e., "foreigners," and all stopped dancing, and greeted us with raised torches and shrieks. We were then led to another part of the Emil where we should see better, and also be more out of the way of the dancers. Thump, dump, thump went the drums, and the dancing

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began again, some of it merely strange and to us unmeaning posturing; but at intervals there would be a wild outburst, and a dozen men would seize hands in a line and swing, howling and prancing at mad speed, round the drums, their wet bodies glistening in the torch-light, while the rain fell in sheets out of the darkness overhead. The primitive character of the setting, the wild frenzy of the dance, the thrill, almost the horror, inspired by the deep insistent note of the drums, the savage chanting, the flashing torches, and the wet gloom, mingle together in the memory as one of the most dramatic scenes of a lifetime.

At last there was a pause in the proceedings, and during the interval the rain grudgingly ceased. More torches appeared, and in their light we were able to make out that at one part of the dancing ground a number of young bamboos had been set up in a row. They were about twenty feet high, and on the tip of each of them had been secured a (highly conventional) "bird," made of grass and feathers and painted. Several young men seized these bamboos and swayed them from side to side in time to a softer style of chant and drum-music, bending them farther and farther each way until all were levelled on the ground, and they were then taken away. One of the

dancers who had been to Queensland and "savvy talk b'long you too much," approached us at this point, and said apologetically, "Now white man he go. Altogidder mary" (he here indicated a group of women now beginning to form up) "he danish" (dance). "Tomorra, sun he come up, planty man come makey danish, white man he come, *altogidder* he come."

It was tantalising, for here were the ladies in question exactly opposite us, intriguingly costumed in grass petticoats, their bodies covered with tassels and beads and shell jewellery of armlets and leglets, while their entire faces were painted with red-lead colour. Whether these further performances were considered to be unfit for our young eyes (as was probably the case), or whether it was shyness on the part of the *corps de ballet* (which was possible, but unlikely), cannot be said, but we thought it wiser not to attempt to force matters, and baling out the expected "tambakka" as far as it would go round the company, we departed.

The next morning was fine, but the Skipper had by this time become so much interested in the Maki that he decided not to go about our proper business with the sun and sextants and chronometers, but to stay on to see the rest of it. We landed therefore at half-past

seven; just as the ground and the glistening trees were beginning to be dried up by the fast ascending sun. A few natives were collected at the Emil, and on our arrival emissary small boys were sent out to announce us, and soon crowds began to flock in, many of them having come from the mainland and from other islands by canoe the evening before. It would be difficult to say how many there were. A considerable number were evidently complete strangers, speaking a different dialect; some, we were told, were from the high bush of the centre of Malekula, and some even from its western coast.

They had never seen white man before, with his quite unnecessary garments, and they felt us all over curiously, both as to the skin where it was visible, and almost especially our clothes. My own proportions, in loose white cotton garments, seemed quite gigantic to their slim nakedness, and occasioned much delight. My shorts were pulled up at the knee, and my stockings pulled down, disclosing a not immoderate, but to them enormous pair of calves. The Queenslander who was superintending this fat-boy exhibition remarked admiringly, "My word, you, you kaikai bullamacow too much" (meaning, I hasten to add, not so much that I had overeaten myself,

as that I was lucky to be able to get sufficient bullamacow to attain such proportions). Further comments by the bystanders on the appearance of all the white man party being in the native language, were unfortunately lost to us, but they produced roars of joyous laughter from all who understood. We inquired what had been said, but merely were told, "Man-bush he laugh, he talkeum, 'Oh, bigfella man you altogidder, too much, my word!'" But I expect the real remarks were something much more scandalous than so tamely polite a comment. In such pleasant if somewhat personal causerie we passed about half an hour. While it was proceeding, pigs had been brought to the Emil in considerable numbers, and on arrival each was daubed with large streaks of red ochre paint, apparently in token of sanctification for the coming feast.

So far as we could make out by inquiry there were several different ceremonies combined in the Maki festival, and all of them included the sacrifice (and the subsequent *kai-kai*) of pigs. There was one ritual evidently connected with the supply and increase of yams, coco-nuts, fowls, and pigs; there was a second connected with the payment of pigs from one village community to another, either as a regular tribute or as a cross-exchange, in token

of amity and peace following a "war"; but the chief ceremony was certainly the sacrificing of pigs to the various *demits*, or ancestors of the population, whose effigies and altars surrounded the Emil.

As soon as pigs and people had assembled, the opening performance began. A sound of chanting, soft and pleasant if wild, was heard "off" among the trees, and presently there came on to the ground a party of about sixty men, painted and feathered for the occasion.

The paints were charcoal black, red ochre, and white lime, and were smeared or patterned chiefly on the faces, but also on the upper parts of the body, while the feathers were arranged in lines of small white tufts, stuck into the frizzed-out mops of hair. Some of them had also in their hair small bending wands like the antennæ of a butterfly, made of thin strips of bamboo, similarly tufted with feathers. Bunches of bright-coloured leaves were stuck into their armlets, bracelets, and into the string of beads round the waist that supported all there was of costume.

We could not at first make out what the small white tufts in the hair were made from, until one of the "Queenslanders" explained that they were "kerass b'long powel"—that is to say, the "grass" or feathers of a fowl.

In beach-la-mar language it is not so much that "all flesh is grass," as all that grows upon flesh, such as fur, feathers, or hair. "Kerass" also extends to the leaves of a tree, so that one little word is made to go a long way and to save a lot of dictionary bothers.

The dancers came by in a single line at a jog-trot, every naked right foot telling, falling flatly and simultaneously on the bare ground as the line advanced. Without turning their heads even to glance at us, they went by snapping their fingers, and singing in an undertone. They made a complete tour of the Emil, passing out and in, out and in, by the various entrances through the trees that surrounded it, and finally disappearing down that by which they had originally come on to the stage. They were soon followed by a second band of sixty or seventy men, similarly got up, prancing along with a new and higher step, also smacking the ground in time together with their bare feet. Each of these men waved aloft a large wild-banana leaf, with bright crimson midrib and stem. The scene was infinitely picturesque. The now brilliant sunshine was pouring down through the intervals in the branches overhead, and every leaf in the still wet shade beneath the trees was glittering with last night's rain, so that the feeling of dark and

savage mystery that had accompanied the night dance was exchanged for one of colour and wild rejoicing.

The passage of the second party of men completed the purgation of the dancing ground for the ceremonies to follow, for, so far as we could learn, the purpose of what we had just witnessed was the driving away of devils. "Altogidder man he fight planty b'long debbleum, he send him he go quick, too much." Then began the dance. A strong party of drummers mustered at the drums, and a tripping measure was thumped out. A plumed and painted party of men appeared all in line, bearing feathery coco-nut leaves, clubs, spears, and muskets. They were headed by three girls, in trailing grass tassels and fancy waistcloths of coloured matting with long fringes. Their hair was frizzed out to its farthest extent, and was adorned with fluffy tufts of white feathers in rows. Two of them had painted their faces all over with bright red paint, and one with deep purple. In their hands each girl bore a curious and graceful emblem, from the form of which we presumed that the dance was one connected with growth and increase, for it was a newly sprouted coco-nut. The husk had been removed from the nut, and the shell was painted in many colours and

devices. The young sprouting leaves, each about four feet long, had been stripped of their feathery fronds, and the backbone of the leaf pared down till it was thin and supple as a whip-lash. There were four or five of these sprouts to each nut, and they, like the girls' hair, were decorated with little bunches of white feathers, tied on at even intervals along them. These curious young ladies, each bearing a similarly treated coco-nut, trode a solemn measure in front of the male mob of warriors. They passed once round the drums, and disappeared among the trees at the side. Three or four similar groups of dancing men, with girls leading them, now followed, but all differently adorned, and bearing in each case different emblems—in one case a sucking-pig.

When this was concluded, the most important stage in the proceedings of the day was reached—namely, the formal offering of the sanctified pigs to their appropriate *demits*. Representatives of the family that was offering a pig or pigs appeared, and after a short dance and a *feu de joie* from their muskets, they lined up across the Emil, facing the effigy of the ancestor. As many young men as was necessary now seized up from the ground one or more of the *sacrés cochons*, which since their daubing with red ochre had been lying

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in rows with tied legs, poor brutes, not suspecting, let us hope, what was in store for them. Hugging closely in their arms the loudly expostulating sacrifices, the young men ran with them round the drums, and placed each on the ground in front of the *demits* to whom it was dedicated. From the fact that it was possible for a man thus to carry a pig in his arms, it will be realised that the island pig is a much smaller animal than that to which we are accustomed at home. A man then advanced with a wooden spear and stuck it into the pig, but not sufficiently deeply to kill it. Squealing horribly, and gushing blood, it was laid on the stone altar of the *demits* to whom it had been dedicated.

When every *demits* had been supplied, there were still many pigs left that had not been appropriated, and these were disposed of in the following manner. A large body of donors appeared, each grasping a pig. In front of them were six old men, chiefs and masters of ceremonies, who were armed with what one might call "dummy" spears made of bundles of reeds, about ten feet long, ornamented at the point with a tuft of grasses. These old gentlemen danced along in front of the younger men in stiff rheumatic circles, with leaps devoid of spring. Then suddenly, and without the

least warning, one of them would throw his "spear" in the direction of the *demits* that he considered to be in want of more pork. He cared nothing for the spectators standing round the Emil, and I was almost "speared" myself as the weapon, if you could so describe it, whizzed close past my face, and completely struck down a native onlooker just behind me, who happened to be standing exactly in front of the intended altar. No apology seemed to be expected, and certainly none was offered.

When all the remaining pigs had been distributed in this chance manner, a small fire was lighted in front of each, and its still squealing, or, happily, dying pig, and the ceremony was over. All, that is, except the baking of the pigs and the succeeding feast, when the *demits* had finished with them, which was pretty soon afterwards. For this part of the Maki we would not wait. The missionary warned us of its horrors of cruelty, and of the equally horrible scene of gluttony that would follow; scenes that not even the presence of "man b'long man'wa'" could prevent.

We went back to the ship as quickly as possible, with the shrieks of the unfortunate pigs pursuing us as we pulled off in the boat.

These ceased shortly after we had got on board, and we heard no more than the in-

cessant booming of the drums through the remainder of the waning day and all through the succeeding night. It was a savage and horrible ending to a day that had begun so innocently and interestingly.

The fine weather held, and on the following days we ran the postponed Meridian Distance to Efate and back to Port Stanley three times. The results worked out very satisfactorily, which was fortunate, as these days proved to be the very last of the fine weather season in the New Hebrides. We sailed for Noumea in New Caledonia, and thence to Sydney, to arrive there in the more-than-tropical temperature of Christmas-time. We felt it severely after the islands, especially as in Sydney one must be dressed as if in England, and you make a guy of yourself if you put on "whites." We bore up under it, however, remembering that in three months' time, when the "fair sheets" were draughted and our New Hebrides survey set down definitely on paper, we were to return to our homes on the other side of the world, bearing our sheaves of charts and other results with us. A "New Commission" was already being gathered together, officers and men, to relieve us, and to continue the New Hebrides survey from the point where we had stopped at Port Stanley.

After three years of the Queensland coast and the islands, to be home in April seemed to be as unbelievable as it was desirable. At the appointed date the good ship *Ballarat* bore us away. As she came off from the wharf-side the golden ball at the end of our long "paying-off pendant," hoisted at the steamer's mast-head, flipped about over the heads of the see-you-off crowd assembled on Circular Quay, while the chorus of the old *Dart's* ship's company (now mere passengers) arose—

"The an—chor's weighed,  
The an—chor's weighed,  
Fare-well, (*fff*) Fa-a-a-rewell,  
Remem-ber me!"

Some of them did, I know, but some perhaps didn't.

There, as we passed her, was the little *Dart* in Farm Cove, off with her old loves and already on with her new, as at several previous changes of commission in her fickle career. She seemed to be satisfied, and so were we. Full of wonderful memories behind, full of wonderful anticipations ahead, both of them happy, we steamed down Sydney Harbour, round the Sow and Pigs, out between the Heads—homeward bound.

**A SECRET SURVEY**



## CHAPTER I.

### KHOR MUSA.

DURING the year 1902 a good deal of diplomatic anxiety had been felt, not only on account of the slow but sure movement of the Russia of those days towards India—an anxiety that had existed for a long time previously,—but because the movement had begun to take another direction, and one even more serious to British interests. The giant hands and yearning fingers, which had been successfully groping south-eastward through the hidden and easy roads of Caucasia and Turkestan, had now begun upon Persia.

Reports reached us of mysterious inspections by “foreigners” of the Persian coastline, evidently seeking for some hitherto disregarded notch in it which might show possibilities of being converted into a commercial or a naval port, or, better still, into both.

In the early days of 1903 it became necessary to take steps of some sort.

Ever since the seventeenth century, when John Company began to oust Portuguese trade from India, it has been realised that we must hold in our hands that side door to the East—that “tradesmen’s entrance,”—the Persian Gulf. With this end in view several naval battles have been fought in the Gulf, from 1620 onwards,—all of them forgotten, as “side-shows” easily may be, though all of them were quite successful. The prestige they produced is still maintained visibly and effectively in the sway exercised by the British Political Residents established at various points on both shores of the Gulf. They, in their turn, are supported by naval vessels whose commanders keep the peace of the narrow seas, preventing piracy, gun-running, and slavery; and are, besides, the upholders of the Truce that has been enforced by us on the wild Arab coastal chiefs, in order to keep them from one another’s throats. With all of this necessary, ancient, and undisputed supremacy at stake, prompt counter-action against interference by any other nation was necessary. The first step to be taken by the Foreign Office was to inquire at the Admiralty whether there was, in fact, any notch or inlet on the Persian coast which could, with reasonable chance of success, be converted into a Russian naval base? The

question having reached their Lordships, was docketed "urgent" and sent on to the Hydrographic Department.

This Department, in its wide-flung survey of the world, embraces not only all nautical science and sea knowledge, but, in those days, still retained in its dark cupboards the germs from which sprang the present Naval Intelligence Division. It was the "Inquire Within" on all maritime and naval subjects, and it is still the boast of the Department that no inquirer is ever sent empty away. Admiral Sir William Wharton was Hydrographer to the Admiralty at the time, having already held that responsible post for eighteen years, and on receipt of the pink-tabbed query, he sent at once for the published charts of the Persian Gulf. They were not modern charts, but though the scale on which they had been plotted was a small one, the indentations and other details of the coast-line had every appearance of having been protracted from the results of large-scaled scientific surveys. Hydrographic surveyors, godlike as they may appear to be in their attribute of omniscience (as mentioned above), are, however, human to this extent—namely, that some are good and some are evil. The latter denomination, the untrustworthy, are now all well known. When

one or two wrecks have been the result of navigating by his chart, the character of any surveyor as a bungler, or, worse still, as an omitter of rocks and dangers, is soon and painfully established. Sir William looked at the title-heading of the chart (in which the names of its authors are set forth), and saw that while the chart had been "compiled" in 1860 by two reliable men, the actual small and detached surveys from which it had been pieced together had been made during the eighteen-twenties by two named officers of John Company's sea service, of whose character and ability nothing was known, either one way or the other. Now the original field-work of all hydrographical surveyors, from which their published charts are drawn, is kept carefully labelled and stored in dim cellars of the Admiralty awaiting a day of judgment, such as now seemed to have dawned for "Captains Gay and Brucks of H.E.I.C. Marine, 1821-29." Sir William sent for these originals.

There is, in the Hydrographic Department, a collection of Naval Grandfathers who undertake the duties of "messenger," attended by young boys, presumably their grandsons—"chips," whose most ostensible duty in life is to make tea for the "old blocks."

The order for search for the documents

having been received by them through Mr China, the head messenger (for such was his remarkable name), great was the company of the paper-chasers. They rushed forth, both grey-haired eld and squeaking youth, down to the Persian Gulf Store, leaving the nice drop o' tea wetting in its pot, and the perpetual kettle of the Messenger's Lobby to pour forth its steam upon the deserted air. One hour, two hours went by; the tea cooled and blackened, the kettle-bottom burnt through, and still the agitated search amongst the dust of archæo-hydrographical ages remained unrewarded by any discovery of the relics of the required date. At last it was found out from the Registers that, when "John Company" "turned over" its naval records to the Admiralty, all that had reached the Hydrographic Department, so far as the Persian Gulf was concerned, were the engraved copperplates, containing the compilation of 1860 before described, from which the charts themselves were struck. The hydrographer was not to be satisfied by this discovery, as might have been a lesser man. He cabled to Bombay to inquire where the "originals" were, and to request that they might be sent home at once for his inspection. The reply came back that they no longer existed. There had been a great

fire in Bombay dockyard at about the time of the turnover, and the whole of the documents, with many others, had then been destroyed ! "Very well then," said Sir William Wharton, "an officer must be sent out forthwith to examine the coast of Persia, by 'running survey,' and to report whether the Russians will be able to find there a harbour capable of being fortified for use as a commercial and naval base, for the available evidence as to the existence or otherwise of such a harbour is not conclusive." The First Lord was notified accordingly, and I was appointed to start for the Persian Gulf by the next steamer to make the required survey.

The cloak of secrecy was cast over me. Instruments and books for my use were gathered together, stealthily, in the Secretary's room, unnamed, unaddressed, which I was to take away furtively and pack in my private portmanteaux. I was ordered to drop my rank and to take my ticket as a plain, if mysterious, Mister ; and, under a general smoke-screen of lies and dissimulation, I set out from Charing Cross at 9 A.M. on April 2nd, 1903, overland to Marseilles, sailing on the following day for the Shiny East in the (quite appropriately named) P. & O. s.s. *Persia*. The great steamer was nearly empty of passengers, and the few

she carried were almost all of them military officers. Unfortunately one of them happened to be an acquaintance, and this fact at once tore a largish hole in my cloak of invisibility. Those were times when it was still etiquette to ask questions of naval officers as to where they were going, and what job lay before them. About twelve years later than 1903 this custom changed rather suddenly. Polite interest, such as this, was all the more trying through being quite casual and unnecessary, but it was given to me (by the Father of Lies, I suppose) to reply, on the first occasion of such inquiry, that I was going out to the East Indies Station "for disposal." This answered perfectly. All the soldiers left the ship at Aden, and none of them discovered that commanders are not usually sent out from England, vaguely, "for disposal" by the Admirals of Stations; nor that my uniform outfit, for a presumable three years' commission in Indian waters, was locked in two tin cases in my cabin, and consisted chiefly of theodolites, sextants, field note-books, and drawing instruments. At Bombay, having shaken everybody off successfully, I transferred myself, darkly, to the British India s.s. *Kistna*, and sailed, almost at once, first for Karachi and thence for the Persian Gulf.

The little *Kistna* was a great change from the ample *Persia*, and nearly every passenger by her was an Asiatic. The heat of the stuffy little cabins was too much even for them, and they all camped, picturesquely, on the deck outside the saloon, on the tops of the cargo-hatches, with their unsmiling wives and solemn families—for no polite Indian person ever laughs or looks happy,—their pipes, their food, the dishes thereof, and their beds. Each family arranged itself in a neat and separate circle. They looked like a series of bored and exclusive picnic parties in Richmond Park on a crowded holiday. The importance of fresh air and of propinquity to the ship's side became apparent shortly after we got to sea. No doubt, sad previous experience had recommended to them the democratic deck as a living place, even though first-class saloon fare had been paid. Thus, there were not many available sleeping billets on deck for a lone European. On the first night out, having just dropped into a par-boiled slumber in my cabin, I was awakened by a horrible, slow, crunching sound. It came from beneath my bunk, and investigation showed that it proceeded from the ship's cat, who was engaged there in supping off a large rat! I suppose that no cat has ever before, or since, travelled so quickly through space as this one;

initial velocity being imparted, with great effect, by means of the metal wind-scoop, seized out of the cabin scuttle, and suitably applied as a propellant to the hinderend of the intruder.

Four days later we arrived at Maskat, where I joined H.M.S. *Sphinx*, the Persian Gulf gun-boat carrying the senior naval officer for those waters—at that time Commander Kemp.

Maskat lies on the Oman coast of Arabia, and is the capital of that province, the abiding place of its Sultan. Although actually outside the Persian Gulf, it occupies so commanding a strategic position near the entrance that it has always, rightly, been considered as an integral part of the "command." It is possessed of a strange and even diabolical picturesqueness. The harbour is a small bay—almost a cove—about a mile deep, and less than half a mile wide. It has a semi-circular head, where, on a narrow lunette of flat ground, the white little town of Maskat lies jammed in between the sea, which bathes its very front doors, and a steep uprising of dark fantastic hills, which curve round immediately behind the city wall at the back. As you enter the bay in a ship you find yourself shut in immediately, on both sides, by a tattered wall of deep brown precipices, utterly bare, utterly savage, springing suddenly from the coast-line. It seems as if

you had been transported into the crater of a volcano, not only through the outward resemblance, but also by the temperature. Every breath of free ocean air is excluded, and you expect to see slow wreaths of mephitic vapour arising from the exquisitely blue water. It is as hot as the mouth of hell, and has as easy an entrance.

At the head of the bay, dominating the town on the right hand and on the left respectively, are two fortifications, Meráni and Jaláli by name, so strangely un-Eastern in appearance, indeed, so authentically European and mediæval, that, in the midst of surroundings which epitomise Arabia, they seem to be of the stuff produced by enchantment. They were built by the Portuguese after their capture of Maskat in 1508, and, still untouched by time's rude hand, picturesquely defy the world from their hill tops, with battlements, machicolated towers, and curtain walls. In the centre of the front of the town is the Sultan's palace, and on the left, as you look at it from the sea, is the British Residency, large, square, and white, pressing itself closely into the only gap in the crater-wall of the bay; thus getting the first and best of every breath of air that wanders in, having lost its way at sea.

At first sight you wonder why this scene of

baking desolation, of hunger, and of drought should ever have been fixed on by man to be his dwelling-place; still less, that it should have become a capital city, even of a desert. After a little search, however, you can distinguish at the back of the town, in a recess among the bare rocky knees of the hills, a fringe of date palms; and around them there actually exist a few wells, which are made to produce a small area of fertility. The water is levered up to the surface by immense beams, supported on high fulcrums, and poured into the irrigation trenches. All night long you may hear the melancholy groanings and squeakings of these water-hoists. The noise is intentional. It lulls to sleep the owner of the gardens; but if at any time it should cease, the said proprietor uneasily awakens, and becomes conscious that the man in charge of the bullocks that work the lever-machinery has himself sought repose. Then he arises in his wrath and goes forth to find out why the —, what the —, who the —, all in Arabic—a language more delicately adapted to bring calm to the angry soul than probably any other form of speech. Its neatness and inventiveness in providing satisfying insults is beyond praise. "Truly," say the happy possessors of this language, "God created three perfect things—

the endurance of the Camel, the speed of the Horse, and the tongue of the Arab."

Besides the food-gardens, there is another reason for the existence of Maskat on its present foundations—namely, the security of the position. There is only one passway through the wild hills at the back from the deserts beyond by which Bedouin raiders can reach the little city; a narrow defile, whose course is marked by watch-towers; and there is a second road by the beach, also closely defended. As you lie, sweating, on your deck-mattress at night, dreamily cursing the insistently complaining water-hoists, there rises suddenly on your unrest a long and wavering howl, as of a lost soul in its endless agony. It ceases, and is responded to by a second, a third, a fourth, and others in decreasing faintness, like an ugly echo. It is the sentinels of Meráni and Jaláli, of the city walls and of the hill-towers beyond, proclaiming to each other every hour that they watch, that Allah is in His Heaven, and that all's right with the world.

. . . . .

My orders were to examine the whole of the Persian coast, beginning at the Shatt al Arab—"the Arab boundary"—namely, the channel by which the combined Tigris and Euphrates reach the sea, and to work eastwards and south-

wards thence to the island of Kishm, four hundred and fifty miles distant, at the mouth of the Gulf. The hot weather, when no man may work, was already rapidly advancing; and as soon as the *Perseus* appeared at Maskat, to relieve the *Sphinx*, we got away at once for the fulfilment of the above fairly "tall" orders, and arrived off the bar of the river on 28th April. A buoy is moored to mark the position of the bar, and we anchored near it. The land, which was twenty miles distant, is very low, so that there could be seen of it only a dim outline of miraged date-palms, where the village and fort of Fao stand at the actual river mouth. We were not anxious that our presence should be known, and did nothing, therefore, in the way of saluting the Turkish flag, or even of appearing within sight of the fort, as, normally, would have been polite and necessary.

Instead, we sailed early next morning eastwards towards Bushire, the first harbour of any importance on the Persian coast, but with intention of "taking a look around," *en route*, at a somewhat enigmatic inlet, twenty-five miles eastward of the Shatt al Arab, named on the chart as "Khor Musa."

The word "khor" stands, in Arabic, for a long and narrow creek leading in from the

sea. Fissures of this nature are a fairly frequent geological feature of the shores of the Gulf. This Khor was shown on the chart in "pecked line"—a symbol indicating vagueness and want of knowledge, generally,—but its course was indicated as a wide straight channel, five miles long, which then forked into two narrow and divergent gulleys, fading into "nothing." It was not, from the chart, a very hopeful spot, and the surrounding country was stated to be "morass, covered with reeds." Nothing but a sheer sense of duty took me into it, nor was Kemp, Captain of the *Sphinx*, at all enthusiastic about crossing the sand-bar, for it was shown as having over it only fifteen feet of water; and this might have been much less, for all the chart knew! However, he got the old ship over it safely, and soon we were paddling along happily, in deep water, up the straight channel, until we arrived at the spot where the Khor forked off, as promised by the chart, into two smaller channels, and here we anchored in eleven fathoms. I had, by now, begun to feel considerably more interested in the place; for, instead of the five-mile length given to the Khor on the chart, we had already penetrated northward for nearly nineteen miles in from the sea. The water was still quite deep, and the two diverging arms could be

seen stretching away before us for a great distance, one to the north-eastward, and one to the westward. We seemed to have hit on a "soft thing" at the very beginning of our investigation.

The scene was a strange one. It was half-tide, and, at the level of our eyes, there stretched on all sides of us a brown sandy plain, flat, smooth, devoid of life, reaching everywhere to the horizon, except at one point to the north-eastward, where, at a great distance, a shadowy mountain range lay faintly quivering against the pale hot sky. The tide rose; and when at the top of high-water we looked forth, behold, we were at sea once more! The vast sandy plain had all disappeared under a skin of water, which, oceanic as it seemed, was, in reality, only a few inches deep. Every indication of the two wide channels had disappeared, and no landmark was left but a tiny islet, close to the ship, on which some one had built a cairn of stones. The tide turned, and, as it fell, the dry land gradually appeared, as it may have done on Ararat when the Ark grounded that time, and the courses of the Khors slowly became more and more clearly indicated, until, at low-water, there lay the *Sphinx* in the stream-way of a great channel, flanked by firm steep banks, with the ship's hull sunk to a depth of

ten feet below the flat land surface. The cairned islet had now become an inland hillock, inhabited by sea-birds. It was spring-time, and they were hospitably engaged in providing us with eggs for that and for many subsequent breakfasts. They never wearied in well-doing, and were a great support to the expedition throughout our stay.

From these tidal experiences we realised that it would be necessary to explore while the water was low enough to let us see the banks of the Khors, so as to indicate to us their shape and the direction in which we should steer. At high tide we should have been obliged blindly to grope our way over the surface of what was apparently an inland sea, seeking with sounding-lead and line for the deep channels. Accordingly, seizing a proper moment, we set forth for a preliminary exploration, in the *Sphinx's* steam-cutter, towing a light skiff astern in case of accidents. Equipped with sextant, chronometer, compass, and sounding-machine, not to mention lunch, we felt equal to any emergency. It was a day of amazement. The north-eastward Khor, which was the first to be examined, led us, first, for five miles to the north-east, and then for fifteen miles more to the eastward, up into the heart, as it seemed to us, of the province of Khuzistan. The

average width between the banks was half a mile; the depths in the middle of the Khor extraordinarily great—namely, between twenty-five and forty fathoms. At the point where on that first day we stopped in the boat, we still could see the main Khor stretching away, in fascination, before us, all unknown, untravelled. On our left hand, a subsidiary Khor, coming from the westward, joined the one in which we were anchored in the boat, while, on our right, a great shoal lagoon spread out, glistening for miles in the setting sun. Ahead of us, at apparently about five miles' distance, we could see a little village ringed round with date-palms, the course of the waterway leading to which was indicated by the masts of "dhows," large native boats, whose hulls lay out of sight, grounded at various positions along the Khor. These were the first indications of human life that we had beheld. We sounded with lead and line from the boat all round our position, and found that there was good anchorage water for the *Sphinx*. We determined, therefore, to take the ship up there next day, and stuck a couple of poles we had brought with us into the soft sandy mud of the bank abreast, in order to mark the best position in which to moor.

The following morning, at low-water, we

paddled her up and anchored her in this spot, thirty-five miles in from the open sea. This gave us a new point from which to explore; and presently the steam-cutter, with her attendant skiff, were got alongside the gangway, to be loaded with my surveying instruments. Gum-boots and boat-hook staves were added to the equipment, by the aid of which the steep banks of soft mud might be climbed; for we had quite made up our minds to land and visit the village. The Khor, we now discovered, as we ran up it in the boat, went on for another five miles, tapering and shoaling, until it ended in a muddy trickle. Several branches ran inland from its left bank, and near the mouth of one of them we passed a boat with a man in it. We hailed him, and Abdullah, the ship's interpreter, found out from him the best point at which to land in order to reach the village, the name of which, he said, was Mashúr. The Khor in which was his boat was the one which led to Mashúr; but it was now dry, and even at high-water it would scarcely have been deep enough to carry the steam-cutter to its head. There was six feet of soft and sticky bank, and up this it was necessary to drag ourselves in our gum-boots, using our boat-hooks as alpenstocks, in order to reach the path to the village on the hard ground on the top.

The unshaded sun was pouring down on us, and there can seldom have been a trio of adventurers of a more degraded appearance than Kemp, Abdullah, and myself, when at last we were ready to start on the two-mile march to Mashúr. Our sun-helmets, white uniform, and gum-boots were daubed heavily and disgustingly with mud; our scarlet faces rained down with muddy perspiration, and we each still bore our long mud-clogged staves, to aid us in case of need, when crossing further creeks on the line of march. We were absolute mud-larks! There was no possible means of "tidying-up," so we set forth at once for the little village. Being May, it was the time of barley harvest, and we passed many people out at the reaping. As we approached the causeway leading to the village gate, there were women coming out with pitchers to draw water from the little rain-filled reservoirs among the date-palms. They gazed at us for a horrified moment, then, setting down their burdens, they fled back home in an anguish of amazement at our appearance, possibly mingled—and, if so, very justifiably—with amusement!

While we were *en route*, Abdullah had induced one of the reapers to leave his work, and to go before us to proclaim our arrival to the authorities; and now, as we entered

at the gate, our messenger appeared to lead us to the house of the Sheikh. We were conducted into a humble mud-walled vestibule, half-open to the sky, half-thatched, cool and shady, and bidden to sit down on a dais at one end. Before us sat the Sheikh, amid a group of village fathers, who received us with the grave inborn politeness of a thousand generations of disciplined good manners. We were handed tumblers made of thick green glass, and an attendant filled them, from a leathern bottle, with cool—exquisitely cool—rain-water. In our overwhelming drought we drank, regardless of microbes; but if any existed in the potion, our personal temperatures, which seemed to be many degrees above boiling-point, must have sufficiently sterilised the liquid as it hissed down our throats. No ill effect, anyway, was caused by it.

Our position was, in many respects, a delicate one. The name of "Mashūr" was well known to the gunboat officers of the Gulf as that of the base of the constant petty piracies which took place, unpunished, in the northern end of it; but of its actual whereabouts no one knew, or at least, no one would tell. The name was entered on the chart, it is true, but it was placed fifty miles, and more, to the eastward of its true position, and was carefully marked

with a large ?. Khor Musa had now rendered up to us the long-guarded secret. Anything less like pirate chiefs than these grave, polite, old men now confronting us can scarcely be imagined, surprised, as they had been, in their lair by their remorseless but now entirely defenceless hunters. Yet not the slightest resentment was shown. We were guests, and it was the will of Allah that we should discover them; therefore, useless to oppose it. Courteous compliments were exchanged, local information asked and given, and finally, on hearing from the Sheikh that there was a river close at hand which discharged its waters into Khor Musa, nearly abreast of the new anchorage of the *Sphinx*, we asked if he could provide us with a pilot to take us, in the steam-cutter, up it. In a few moments there arose one of the greybeards, who declared himself to be pilot to the Sheikh of Mohammerah—the chief Sheikh of the whole district,—and that he would take us for twenty rupees. This was the final coal of fire on our head, and we rose to go back to the boat. Coffee of an admirable flavour, but thick with sweetness, in the Arab fashion, had followed the draught of water; and now the parting guest must be politely speeded on his way. The Sheikh sent, and presently a mule and a donkey were

brought, the sole available beasts of burden in the village, and by taking turns in the saddle, we four—for Hajji Gulim Shah, the pilot, came with us—reached the steam-cutter just at sunset, and got back to the ship before complete darkness had set in.

The expedition up the new river, which was named Khor Dorak, was arranged for a day later, and took place under the most fortunate circumstances. We chanced to have hit upon the day of Spring Tides, and thus we started off in the steam-cutter on the first of the flood-stream at 6 A.M., were carried up on its wave by noon to the head of navigation, thirty-five miles inland to the westward, where was a village named Beziya, stayed there an hour, and returned to the ship by 7 P.M., swiftly and easily on the ebb stream. Under no other tidal conditions could we have carried out such a programme, though it was impossible for us to have known this beforehand. We should have had to have waited a fortnight for another similar day.

In one way this river was our most important find in connection with Khor Musa. If the Khor ever was to be a "base," either for ourselves or for any other Power, a good supply of fresh water was a primary essential. It would be a necessity anywhere; but how much

more so in the arid and nearly rainless Persian Gulf ?

The water of Khor Musa was of the most bitterly salt character, having nearly twice the salinity of the open ocean ; and the lack of fresh water, I could not but feel, was a severe handicap on the value of the discovery of this otherwise possible base for small craft.

But as we steamed up Khor Dorak, and every few miles tested the water for density, I found, to my great satisfaction, that first it was becoming less and less salt, then less and less brackish, until finally, at about fifteen miles from the mouth, it was quite fresh. The scenery changed with the saltiness. The dreary sandy plain, fronted by tidal mud-flats, gave way, as we steamed inland, before the soft influence of the fresh water. At ten miles from Khor Musa coarse bamboo grass began to fringe the banks, while the strip of pasture-land on both sides behind them became wider and wider, richer and richer, until it spread out, green and far, to the flat horizon, and was dotted with cattle and sheep. After twenty miles, villages and date-palm groves began to appear on both sides, whence stupefied men and a myriad of half-terrified children came out to view the first steam vehicle of their

lives, unable to decide whether it was Jinn or Afrit, but hoping for the best!

At last our waterway narrowed into a small stream ten yards wide, and finally we were brought up by a small bridge thrown across it at the village of Beziya. Here we landed; and while Abdullah bought fowls for us at a shilling apiece, and five fat sheep at twelve shillings each, I got observations of the sun to find out our geographical position. When the ebb-stream began we started home with it, and, as we went back, checked the running survey of the river I had made on the way up, getting more sun observations for longitude when the conditions were propitious. Not far from the spot where Khor Dorak opened into Khor Musa, there was a sand-bar, which we had just, but only just negotiated in the steam-cutter on the way up. The boat was then drawing two and a half feet; but, on the return journey, with our marketings at Beziya making a considerable extra cargo, several further inches had been added to our draught. It was getting dusk when we reached this point, and the old pilot was squatting in the bows directing our course with solemn authoritative wavings of the right hand or of the left. Presently he gave quiet utterance to a short remark. Abdullah translated, "The

pilot says, sir, that he thinks it is too late to cross the bar: the water has already fallen too low." And, just as he said this, we grounded. The skiff was hauled swiftly up alongside, and every available sheep and weight, living and dead, was cast into her. In the steam-cutter every one seized oars and boat-hooks, and shoved hard, but the heavy deep-keeled boat remained with bows buried in the sticky ground, as unmoved as was the old pilot himself. There he sat, calm, imperturbable, amidst our activities, and our, to him, undignified anxieties, merely pointing out the best direction in which to push in order most quickly to reach deeper water.

"Ask Hajji Gulim," I said to Abdullah, "if he thinks there is any chance of our getting off to-night, or if we shall have to wait for the morning tide?"

A few grave words fell from the pilot's lips in reply. "He says, sir," says Abdullah, "that it is as God wills." This was serious. On hearing it, Abdullah—a portly person—was ordered into the skiff. She was already crammed with panting sheep and terrified fowls, but he managed to find foot-room. "One, two, three, *shove*." We shoved feverishly: it was now or never! The steam-cutter withdrew her bows, grudgingly, a few inches.

"Again so," and she floated, touched, floated, touched, the ebb-stream carrying her gently down meanwhile, until at last she was over the bar and in deep water! The skiff rejoined us, and we were back on board the *Sphinx* within an hour.

On the next day when it came to paying off the old pilot, before sending him home to Mashúr, it appeared that he was considerably more sophisticated than we had previously supposed (probably from intercourse with the steamer world of men dealing at Mohammerah and Basra), and that he was completely aware of the fact that the Western seafaring man, in the hands of the Eastern bargainer, is as wet clay in the hands of the potter. He moulded us, therefore, according to his will—that is to say, he squeezed an extra ten rupees out of his helpless employers, and left, declaring that "he had never before met naval officers like unto ourselves"—an enigmatic utterance, of whose purport I am not, even now, quite clear.

Having thus explored the N.E. branch of Khor Musa and its off-shoots, we now took the *Sphinx* back, down again to our first anchorage—i.e., the spot where the original main channel forked into two parts, in order, from there, to examine the western-going branch. After

a short pioneering visit in the steam-cutter, we moved the ship up this new channel for a distance of five miles, and anchored her there in seven fathoms. It was considerably narrower and less deep than the other Khor, but still, quite a good anchorage for small vessels. From the new anchorage we went on for a farther twenty miles in the steam-cutter to the westward. The Khor ended here in a muddy *cul-de-sac*, into which fell several small streams of fresh water, none of them large enough, however, to affect the salinity of the Khor water to any marked degree. There were no inhabitants nor cattle to be seen, but it was evident that, once upon a time, the surrounding land had been lived on by men, for traces of irrigation channels, now wrecked and fallen in, could be seen in all directions. Up at the head of the Khor several wild pigs, outcasts of Arabia, could be seen rooting and wallowing in the mud of the streams. They looked at us in dismay, and rushed noisily away. On the return journey we met a native boat which had got into the Khor through a branch channel, having come by a devious route from the Bahmishir River, some miles to the westward. The men in it told us that the Khor was named "Bukhader," and that it had been, one hundred and seventy years ago, an outlet of running

water from the Karún River, but that it had gradually silted up, and the villages which formerly had existed along the banks had disappeared as the water became more and more salt.

We had a curious experience during this exploration. As we steamed up the Khor I was looking out for a place at which to land to get sun observations for longitude, when I saw, a short way ahead of the boat, and close to the water's edge, a sandy cliff, apparently ten or twelve feet high, with some flat ground in front of it. In the face of the cliff was a row of caves, high enough at their entrances for a man to stand upright, and they were barricaded, each of them, with boughs of brushwood. On the flat top of the cliff into which they had been scooped, stood a few low tree trunks cut "short off." Kemp, who was accompanying me as usual, was as much interested and surprised as myself. This was to him, as to me, quite a new type of Arab habitation, and we decided to land at the spot, to visit the troglodyte dwellings and examine the unusual vegetation. As we approached in the boat, we were rather surprised to find that the caves seemed somewhat smaller than we had at first supposed; but we landed abreast, and walked up to them. On reaching

them, we looked at one another in blank and even creepy dismay! It was as if we both had fallen under the spell of some ancient Arabian necromancer! For the "cliff" had become only twelve inches high; the "caves" were mere holes burrowed into them by some sea-bird; the "barricades of boughs" turned out to be a few little brushwood sticks laid in the mouth of the holes, in the form of a nest; and the "tree trunks" on top were but the broken stalks of a scrubby plant, a few inches high, that covered the surrounding wilderness. We walked backwards from the spot, and, as we did so, magnification and mystification began anew. At twenty yards, objects were already three to four times their proper size; and at one hundred yards, they were ten times enlarged. I can only leave it at that, humbly supposing the effect to be due to some peculiarity of refraction, through the dry and uniformly heated air. The same thing occurred farther up the Khor; for the wild pigs we saw on the bank seemed from the boat to be as large as bullocks—creatures of nightmare, with snouts like crocodiles', and with a mane of bristles on their shoulders, shaggy and great, almost, as a bison's. Probably they would have diminished into ordinary lean little pigs had we been able to get near

them. Distance, on this occasion, certainly lent enchantment to the view.

The exploration of Khor Bukhader ended, we felt we ought to be moving on. We had already spent a whole fortnight over this one harbour; the weather was getting hotter every day, and there was still the whole coast of Persia to be examined. I felt, however, that the importance of the discovery of this wonderful deep-water anchorage, far inland, entirely protected from attack from seaward, and having an abundant fresh water supply, easily available by pipe-line or otherwise, fully warranted the expenditure of time I had given it. It was, I felt convinced, the only harbour in Persia endowed with so many possibilities; and the good luck in hitting on it could scarcely be repeated throughout the much better known coast-line that stretched for over four hundred miles southward before me.

The gilt was off the gingerbread at the first mouthful, yet the rest of the cake remained to be eaten, and accordingly we set forth in the little *Sphinx* next morning, skirting the wide sandy shoals that preclude all approach by ships to the north-eastern part of the head of the Gulf, and so came to Bushire, where we had to make a short stay in order to get mails, coals, stores, and provisions.

## CHAPTER II.

## THE COAST OF PERSIA.

BUSHIRE is a town situated at about eighty miles southward from the head of the Gulf, whose original *raison d'être* was, no doubt, its harbour. This reason still exists, but not for modern vessels, as it is far too shallow for anything except dhows. Regarded with the tourist's eye, it has all the appearance of a large and excellent bay of tranquil water, but when the navigator produces a chart, it is seen from the soundings that a steamer of ordinary draught would have to anchor between three and four miles from the town, and quite outside the protecting shores of the bay itself. The place was a fishing village for one thousand two hundred happy unregarded years, until 1750, when it was chosen by the Shah to be the Portsmouth of Persia. This pre-eminence persists ; and when we arrived there in the *Sphinx*, we found the entire Persian Navy anchored in its principal home port.

This was H.I.P.M.S. *Persepolis*, a gunboat of the most extreme antiquity. We gazed on her with the respect due to age and infirmity, and then exchanged with her commanding officer the proper pompous naval visits, in the best modern style, "the usual compliments" being paid on either side in superfine Dartmouth French and its Teheran equivalent.

The land around the harbour is, for twenty miles, a low flat plain. At its confines the great rampart of mountains suddenly springs up on whose top is the real Persia, three thousand feet and more above the sea, stretching all the way to the Caspian. The hot little town of Bushire, tightly squeezed within its white wall at the tip of a point of land which projects into the bay, is surrounded on three sides by the water. All the foreign consulates, and even the house of the Persian Governor, are left panting outside the wall on the scorching plain. In 1856 we had a little war with Persia, during which Bushire surrendered to our forces, and remained in our occupation for some months. Since then we have retained not only a consulate at the town, but also a Political Resident, whose Residency is at Rishire, six miles away.

The drive there, to report our proceedings to date, was an interesting experience. It

was undertaken in a vehicle whose only living counterpart, probably, was to be found in Napoleon's carriage, once at Madame Tussaud's Exhibition. The ropes with which, like St Paul's ship, it was bound together, front to rear, fortunately held during the drive. As we hopped over the Alpine corrugations of the hard baked track, Kemp and I had grave fears of being left behind on it, in the stuffy after part of the chariot, when, as seemed inevitable, the narrow curving isthmus which connected us with the front wheels, coachman's box, and horses, should at length yield to *force majeure*. We drove thus, in deep trepidation, past the British Consulate, the Turkish, and the Russian; then past the French and Dutch Consulates, amicably conjoined, past the Imamzada Mosque, conspicuous on its little hill, and came at last, with the two parts of our coach still wonderfully undivorced, to the British Residency. The country on each side of the road was already, by the end of May, a brown desert. The crops, green six weeks earlier, were all harvested, and nothing was now alive but a few late trees, blossoming in feverish haste before the rapidly advancing summer should overtake and shrivel them; casting the flowers and leaves of to-day, to-morrow into its oven.

The Residency is an immense building, all pillars and roof, like a vast hay-barn. The rooms in it are merely spaces screened off amidst the pillars, and made mosquito-proof. Its coolness and amplitude were absolute heaven by contrast with the cramped sweat-box cabins of a ship—even of a ship expressly designed for hot weather, such as the *Sphinx*.

It takes a sailor really to appreciate the "blessings of the land," for the enjoyment of which he prays daily; and seldom have I been so truly grateful for anything as for the night spent under that great roof—as wide as it was hospitable.

A couple of days later we left, to resume my running survey of the Persian coast. For thirty miles to the southward of Bushire is a wide and featureless plain, whose every indentation and Khor was well known, and quite unnecessary to resurvey. From that point onward, the flat land bordering the sea is but a narrow strip, a mere footstep between the water and the great ranges of barren five thousand-foot mountains which stand behind it as a wall, running for three hundred miles to the southward. Somewhere along this cramped seaboard there might—but very improbably—exist some unknown crack, or even some bay; and as the water was deep, the coast could

be approached sufficiently closely to investigate it comfortably, and with certainty.

To the British eye, accustomed to a cool grey heaven and a green and fruitful earth, the view of the naked ribs of the brown mountains, roasting under the furious furnace of the Persian sky, raised an unceasing pity for those condemned to live in this earthly hell. There seemed to be quite a large number of such unfortunates. Everywhere along the dismal coast-line village succeeded village, tiny, ancient, fringed with date-palms, and surmounted usually by towers of strength against the enemy, whether sea-pirate or robber of the mountains. Desert lay between each place of settled abode; desert mountains, of drear and monstrous outline, lay behind them; the green desert of the sea mourned in front of them, whitening as it broke over nameless rock and shoal. The most ambitious Power could not but pause before committing its fortunes and its children to the arms of this Moloch land, to wither miserably in the brazen heat of its arid wastes.

Our first stopping place, ninety miles southward from Bushire, was named Ras al Mutaf. There is here a flat point of land, with its end curving round in a long sandy shoal, between which and the shore there is a space of moder-

ately protected water. Here we anchored, with the double intention of making such survey as should show whether this uninviting anchorage, with its neighbouring village, could ever be sophisticated into a naval and commercial port; and also to clear up several doubts that existed as to its geographical position, as to the correctness of the charted soundings, and as to other reported details concerning it. Our intentions were frustrated. The long-pending Shamál came down on us, in a burst, out of the blazing north-west. A hurricane of flame, almost, is this terrible wind. As it strikes you, you seem to be passing the door of an open furnace; you gasp with heat and astonishment. It sweeps along the shore in a deep brown cloud of flying dust and grit. The date-palms, the only living things that rejoice before it, bend, tossing their tough green fronds and load of ripening fruit. The sky and the land disappear in a hot murk; mankind, too, disappears into dug-outs in the ground, shaded by boughs, while it passes over. There is nothing hid from the heat thereof. Between the gusts you may still see the slow camels, sloping southward along the coast road, burdened, strung out, sterns to the wind, disdainful even of the Shamál, without haste, without rest. Surveying work becomes

impossible. There is no sun or star visible by which to find latitude and longitude. No feature remains, whether of mountain summit or of coastal rock, that is not either blurred, or else quite invisible in the brown haze; and the fierce wind raises so big a sea, with white-crested waves, that boatwork and sounding are out of the question. For three detestable days and nights the Shamál blew fiercely; and still we watched and waited. At last, on the fourth day, it moderated sufficiently for us to decide that the place was useless as a harbour, both from its depths and from the fact that there was no protection from the wind.

June had opened upon us when we continued the "Running Survey" to the southward. It is not possible to describe the method by which such a survey is made without becoming either unintelligible, or else desperately boring. The underlying principle is a simple one; the results produced are a mere pioneering sketch; but, for all that, in practice, it is certainly the most difficult method that exists for the charting of a coast; and it needs long experience to produce good results. When one has five or six assistants, all experts, as in a regularly commissioned surveying vessel, it is, even then, work requiring the closest care

and application, and is a most exhausting performance for everybody concerned. A single day of it reduces body, brains, and eyes to the merest pulp. At a distance of more than twenty years, I still require no reminder from my journal of that running survey of the Persian coast to bring back to me the aching memory of the task. Instead of six skilled assistants, I had but two, the captain of the *Sphinx* and the navigating officer, neither of whom, naturally, had ever undertaken anything of the sort before. Fortunately, both of them turned out to be most helpful, not to say devoted. Without them, in fact, the work would have been impossible, and I should have collapsed, blinded by that blinding light, cooked in that terrific heat, while, day after day, as we steamed past it, the austere khaki coast unfolded itself ahead endlessly, and disappeared astern. Behind us stormed the Shamál, now settled down into its usual "seventy days" of summer life, when it blows continuously; often blotting out, in a sudden whirl of dust, the "prominent object" on the coast-line, on a bearing of which I was depending to fix that part of the shore, and rendering my work of no avail. It was a most exasperating survey, but it had to be done. There was no other method by which doubt

might be set at rest regarding the possible existence of an uncharted bay or harbour along the coast. For oneself, seeing might be believing; but in order to persuade a doubting Admiralty, who had not seen, it was necessary to produce on paper, not merely a written report stating that there was no such harbour, but also an actual plotted survey of the coast, together with the angles and observations on which it was based, to show that the truth was in you. Little already known harbours and tiny notches we passed, and in some we anchored and took soundings, while Kemp went ashore to pay a polite visit on the local Sheikh, as "eye-wash" against our real activities. It was one of his duties to pay such visits from time to time, and the Sheikhs, no doubt, thought this was merely one of these occasions. All of these places proved to be entirely unsuitable either for naval purposes or for commerce. Many of them were exposed to the blistering Shamál, which, though worst in the summer, blows at intervals through nine months of the year, while others were open to the S.E. gales of the winter, or to both winds. Apart from disabilities of this nature, there was everywhere the lack of fresh water; and, topping everything else, there was the climate! An efficient naval base

could never be maintained by any northern nation in this Gehenna.

At length we reached Kishm Island, and, with it, the end of the survey came in sight. Kishm occupies a strong strategic position, exactly facing the narrow entrance to the Persian Gulf. It is a mountainous island, sixty miles in length, separated from the Persian coast by a long narrow channel named "Clarence Strait" (after Good King William IV.). There are three towns on it: Kishm, on the eastern extreme, which gives the island its name; Laft, on the northern side; and Básidu, on the western end. It was to the latter spot that we directed our weary steps, and, on our arrival, had the satisfaction of seeing the Union Flag run up on the flagstaff of the village—for Básidu is British. It has been so since 1809, after what cannot have been other than a hot engagement. Laft was "reduced" at the same time; but it was left at that, while Básidu became the sanatorium of the Gulf for our ships' companies, and there was also maintained there a garrison of Indian troops. The hospital and barracks, long disused, are ruins; and there is now only a small village of ninety men, who, with an old Arab, our faithful Agent, represent

the Colony, and are established on an area, scarcely as much as one mile square, of bare and brown but British soil.

When Kemp visited the Agent he heard from him that, not long before, the Russian Consul for the Gulf had arrived in his small sailing dhow, on a tour of the coast. On his arrival, there was immediately hoisted on the flagstaff the Union Flag of Britain. The Consul, a little man, but a fierce, landed; and pointing to the flag, shook his fist at it, cursed it, and demanded to know why it had been hoisted, and for how many years it had been flying there? The Agent, himself an old man with a grey beard, replied that it had been flying ever since he could remember anything, but that there was a still older inhabitant who might know more. On being sent for, this ancient replied in like manner, that he could not remember any condition of affairs in Básidu other than the British supremacy and flag. The little visitor, it appears, then danced with rage (it was in January and the temperature permitted, without great discomfort, this exhibition of the Russian Ballet), and he called both of the old Arabs "liars." "Very well, then," says our Agent, with high composure, "if you know better than we do, why do you ask us?" And with this firm

reply a grave international crisis closed. The Consul went back to his boat, simmering but thoughtful, and resumed his inspection of the coast.

Having thus "made our number" at Básidu, we left and first steamed along the south side of Kishm Island, visiting as we did so the small outlying islet of Henjam, at its southeastern end. Then, after passing the crumbling ruin of the old Portuguese fort at Kishm town, on the east of the island, we rounded into Clarence Strait, and anchored off Laft. In 1622 we sent five ships—or the Honourable East India Company sent them—to assist the Persian forces in besieging the Portuguese at Kishm. The Persians, it seems, wanted to resume possession of their own island; and we wanted the Portuguese trade. Hence the alliance. Both of us got what we wanted, though in doing so the British suffered an unexpected loss. William Baffin, the famous Elizabethan Arctic navigator of Baffin's Bay, was killed at the beginning of the siege of Kishm by a shot from the Portuguese castle. He certainly went in for extremes of climate during his wanderings, and would have been better advised to have stuck to the icefields and the snow.

Laft, the delightful seaside resort off which

we now found ourselves, is a harbour completely enclosed, easily accessible, fairly deep for anchorage, strategically well-positioned, and defensible without difficulty—yet, with all these virtues, it is, like Naaman the Syrian, “a leper.” Not only is the fresh water supply of the most exiguous character, but the position has the reputation—a true one, for we tested it—of being the hottest place in the whole Persian Gulf; and that is to say, in the whole world. Not a breath of outside air, not even the Shamál, gets into it. We sat and dripped helplessly all day, completing a vicious circulation of moisture by pouring down inside us bottle after bottle of partly-cooled aerated waters, which panting Goanese stewards made haste to supply. One could do nothing else but drink, and without liquid one would have become as a desiccated fruit, dried up, mummified. I have thus consumed in a single day at Laft as many as twelve large bottles of the most uninspiring “pop”; and this was well below the average official thirstiness of the *Sphinx*. When night-time came I reposed on a grass-mat laid on my chart-table on deck, clad in the absolute minimum of clothing—in bathing drawers, to be exact,—for pyjamas about one were as abhorrent as a mattress beneath, while the temperature slowly rose,

after 9 o'clock, until it was well up in the hundreds by 2 A.M. The heat then steadied, and between 3 and 4 A.M. there was a blessed, blessed time when it really fell a few degrees. Then came untortured rest. But with the first crack of dawn, buzzing flies attended the death-bed of sleep, and galvanised their limp victim into sufficient activity to arise, don such raiment as might satisfy the conventions, and start off in a boat, armed with sextant and theodolite, for surveying work "in the field." The temperature then might be as low as 97°, but by 8 A.M. it would be well up in the hundreds once more, and, in order to avoid a heat-stroke, it was necessary to return on board the ship to the shelter of treble awnings. Nothing could be done outside that protection until about 6 o'clock in the evening, when an hour might be snatched before darkness closed the scene. Laft could not, therefore, be considered as a possibility for a "naval base," in spite of its other decided advantages.

It was late in June when we steamed back through Clarence Strait, and anchored at its eastern entrance off the town of Bandar Abbás, which stands on the mainland, and is faced by that famous island, Hormuz. Basra, at the head of the Gulf, and Hormuz, at its mouth, are names to take you back, as on a

magic carpet, accompanied by Sinbad the Sailor, to a sandalwood-scented and romantic past. Until the seventeenth century Hormuz was the Mart of the East, where all the riches of India met in exchange with the pearls of Bahrein, with the attars, the pungent gums, and spicery of Araby the Blest, with dyed garments from Basra, with silks and carved work, damascened weapons and delicate filigree of silver and gold from Baghdad the Fortunate. Ichabod! The glory has departed, indeed! Not a vestige now remains of it all save dry ruins; houses crumbled so small that the few poor fishermen who still cling to the place cannot utilise them as dwellings, but make for themselves rude wigwams of date-palm leaves. On a low point above the village is the battered, but still threatening, remnant of a fort built by Albuquerque, when, in September 1507, the Portuguese seized the place and its riches, and reduced its inhabitants to subjection, with no circumstance omitted of audacity and cruelty. There the Portuguese remained in complete lordship until 1622, when, after a siege of three months, Hormuz fell, with Kishm, before John Company's ships, aided by a Persian force. Beside the ruined fort there are many ancient tanks, now empty and dry, cut into the rocky heart of the island. In the days of its splendid

youth, water for these reservoirs was brought off in skins by boat from the River Minab, ten miles away. There is no other moisture obtainable, save for a saline trickle from the hills, after rain. The general appearance of the little island is very remarkable. It consists of a rounded lump of hills, with three or four central conical peaks, seven hundred feet high. The lower parts, all completely barren, are striped and patched and barred with a geological "dazzle-painting" in ochre and red, brown, purple, and buff, while the surmounting cones, in strong contrast, are pure white. The whole effect is that of some monstrous pudding, standing on the blue-and-white plate of the sea, over whose apex has been poured a large jug of thick cream.

A telegram was awaiting us at Bandar Abbas, ordering us to Maskat to await the next mail steamer, which was bringing written orders for further survey work required before I should leave for England. We sailed at once, rounding Cape Masandam, the Arabian gate-post of the Gulf, where it is only twenty-five miles across to the Persian shore. The extremity of the point is a tattered peninsula of hills, whose heart is penetrated by deep volcanic fiords, the whole being joined by a narrow neck to the mainland to the southward.

On its barren slopes there clings a settlement, said to be formed of the last remnants of the aboriginal inhabitants of Arabia—children of Shem, undiluted by the restless Bedouin blood of Ishmael, the race now dominating the remainder of that highly undesirable land.

It was refreshingly cool at Maskat, outside the Gulf limits, for the monsoon had "broken." The gracious moisture and coolness which the monsoon brings across the sea to India does not actually reach these deserts, but it affects the whole Indian ocean generally, so that every coast-line bathed by its waters rejoices therein. The five days that followed at Maskat, while we waited for the mail, were pleasant enough. There was a good deal of back survey work to be plotted and reports to be written, and the busy days on board the ship were usually ended by cheerful sun-downings at the Residency, with tennis and tea. The Residency was a house, however, to be approached with some circumspection, in spite of the hospitality of its inhabitants. It is built around the four sides of a central courtyard. You come into it through an archway at the back, and find a broad flight of stairs on the right hand, leading to the cool verandah and living rooms on the first floor, which thus are well raised above the heat of the ground, and

look widely forth on the harbour. Mrs Resident was a lady whose kindness of heart extended itself far past the plane of humanity, and reached down even to our distant and nasty little relatives, the apes. She kept, in the courtyard of the Residency, a collection of the more highly-coloured of these creatures. No Thames barge brilliant in red, blue, and yellow, can display more startlingly effective bows, or a more originally conceived stern decoration than could these simian guardians of the stairs; and no bargee ever had such a command of the language of execration as they. They gnashed their teeth, yearningly, on the unfortunate visitor; they leapt and danced at the full extent of their straining waist-chains, clucking and gibbering at him, or hideously shrieking battle, murder, and sudden death; they seized the handrail—mercifully a stout one, and they could only just reach it—and shook it in impotent fury. In brief, they put the wind up you. By closely hugging the wall on the starboard hand, and not hauling to the wind again until well past these dangers, it was, however, just possible to circumnavigate them; and the delightful welcome that greeted the visitor on the top landing was quite well worth the passage perilous below. One day there was to be a picnic which (it was so arranged)

was to take place on the top of the steep rocky crags that rose immediately behind the Residency to a height of about three hundred feet. There was no path; it was real mountaineering, and involved stepping upwards, nearly perpendicularly, from one dangerous and precarious foothold to the next. It was supposed to be cooler up there than on the shady verandah; and in any case it was a change. Such picnics had often taken place before, and special wooden trays, upon which to carry up the tea things, formed part of the Residential equipment. No diminution was permitted in the glory of the repast. It was set forth on the topmost crag as exquisitely as on the verandah; the silver, the linen, the delicate china, all had to be carried up by the "house-boys." No difference whatever was allowed; and they must have been jugglers of no mean attainments to have scaled those precipices, as they constantly did, carrying the heavy trays without either smashing or spilling anything. When we, from the *Sphinx*, arrived that afternoon, and had successfully evaded the raging monkeys, we were in time to witness an impressive scene, and to learn a lesson in household management.

It appeared that Selim, head house-boy, had struck! He had refused point-blank again to

carry the tea things up that atrocious precipice. In my cowardly and sympathising heart I could not blame him. Not so Mrs Resident. With high originality of method, and entire knowledge of human—and especially of Arab—nature, she summoned to the verandah her whole household; there seemed to be about twenty of them. Selim was then ceremoniously conducted to the largest and grandest chair, while the remainder of the “boys” were directed to pass before him there enthroned, and to salaam deep and lowly, proffering respectful salutations to one who had grown so great as even to equal the Mem Sahib in the giving of orders—the very Mem herself, upon whom the eyes of all hitherto had waited. It was great fun; and no strike was ever more effectively or good-humouredly broken. By the time the fourth reverential mocker had passed, Selim had had enough of it. He leapt from the chair, seized his tray of silver, and presently, with several others, his chamois-assistants, was scaling the difficult peaks, where presently we followed them, deeply impressed.

The mail steamer came at last, and the orders she brought were for us to visit and report on Chahbar, a good-sized bay one hundred and fifty miles away on the Makran coast, opposite

Maskat—whether Persian or Beluchi, it would be difficult to say. It was of strategic importance, and that was enough for us. We sailed immediately for that delectable spot, and spent there five days in obtaining replies to the strenuous string of questions to which it was my task to find the answers. The old *Sphinx* rolled ceaselessly and abominably, day and night, on the monsoon swell which swept in and round the bay; but apart from that, and apart from its almost entire barrenness and lack of water, the place certainly had possibilities. In the pursuit of angles and heights, I climbed the hills that lie beyond the plains on which the little town stands, and I have often wondered since if any true believer came across and cursed my heel-marks in the sand. India-rubber heels were comparatively new in those days, and mine were screwed on with a metal arrangement which left a clearly marked impression of a Geneva cross behind it, easily to be construed by an imaginative native into a sign of the times! We left Chahbar, our work completed, profoundly sympathising with the staff of the Indian telegraph station marooned there in the desert, in tantalising touch with the news and the affairs of the great world, and, like lighthouse-keepers on some isolated rock, in

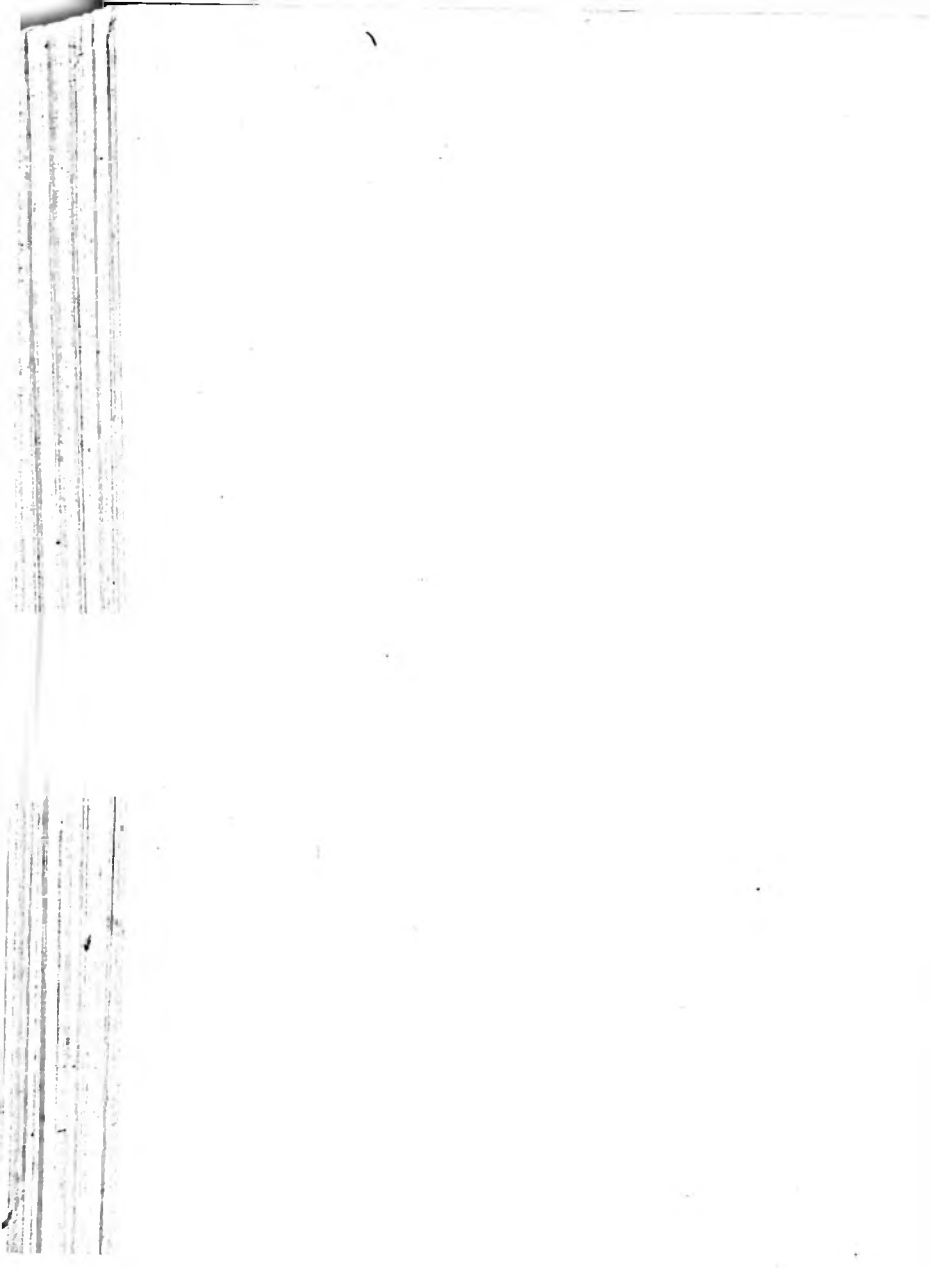
sight of its passing ships, but condemned to stand outside it, a lonely link in the chain of Eastern Empire.

Three days later I was packed up and steaming away into the night by the 10.30 P.M. train from Karachi to Bombay. The line goes across a great stretch of desert, and plunged us at once into heat and drought nearly up to Persian Gulf standards. As I lay in my carriage gasping for air, parched with thirst, the train drew up at the platform of some unimaginable place of habitation in the wilderness, and there came in at my closely shuttered window—for I had a whole carriage to myself—a voice which said, "*Would you like some iced grapes?*" I imagined, at first, in some dismay, that this was only "lightheadedness," and the premonition of a heat-stroke; but it turned out to be a real offer, which almost immediately materialised. If Mr Bell, of the Indian Police, and his sister have forgotten that kind act, and how they shared the contents of their ice-box (without which no sane Indian travels by train in the height of the summer) with an unknown griffin wayfarer, who had no such equipment, they may now know that it has ever been remembered by a ceaselessly grateful recipient.

I sailed from Bombay in the good ship *Arabia*, and got home at the end of July, cool once more and happy, bringing my sheaves with me—sheaves, in this case, of reports and charts, which included, I may humbly believe, discoveries of a useful character. The Admiralty letter of thanks which, in due course, they evoked, made a stimulating glow in that dark corner where each one keeps, or should keep, a critical estimation of his own deeds.



# THE DEEPEST DEPTH



## THE DEEPEST DEPTH.

THAT great bowl of the Earth which contains the Pacific Ocean lies somewhat tilted over on its side between America and Asia. Its eastern lip, high in air, is firmly outlined by the chain of the Rocky Mountains and the Andes lifted up from three thousand to four thousand fathoms above sea-level on that side, while the opposite lip of the bowl, curving between Japan and New Zealand, is correspondingly though invisibly tilted downwards, and lies at the bottom of a series of narrow and abysmal gullies, which are something under or over five thousand fathoms deep. If instead of considering the Pacific Ocean as lying in a bowl, we vary the simile, and see it contained in an immense open mouth, we may say that all the teeth are remaining in the American jaw, but that all have been extracted from the Asian, leaving deep recesses in the ancient gums on that side. At the southern end of the Asian jaw is New Zealand, now but a remnant of its former self. In its early prime it possessed a

north-western arm, which reached nearly to New Guinea, without touching Australia; and there was also a balancing horn to the north-eastward, rather narrower, but equally long, which at the present time exists in the form of a series of banks, almost entirely submerged, whose crests are raised from six thousand to ten thousand feet above the adjacent ocean floor.

Closely skirting the eastern side of these banks are two great submarine depressions in the ancient gums before mentioned. They lie in a north and south direction, and are each of them of about  $10^{\circ}$  of latitude in length, and  $1^{\circ}$  in width. The northern of the two lies abreast the chain of the Tonga Islands, and causes, no doubt, their volcanic instability, while the southern lies closely off the equally volcanic group of islets and rocks called the Kermadec Islands. It was in this southern "Deep," known as the "Kermadec Deep," that we were ordered to get the deepest soundings we could find when, in the old *Penguin*, we were on our way from Auckland, in the North Island of New Zealand, to Tongatábu. Certain hydrographic surveys in the Tongan Group had been ordained, and these Deeps lay exactly on our course between the two places.

Our skipper was a man of an iron determina-

tion as regards Deep Sea Sounding. By heredity he was a Scotsman and a son of Science, while by upbringing he had served in the famous *Challenger* expedition through the deep seas in the '70's, and had assisted in founding all the knowledge that exists concerning the ocean depths, and of all that dwells therein. At that time he had been a mere cypher of a sub-lieutenant, and he felt that now, as a Commander in command of his own ship, his chance of immortality as an Oceanographer at length had come. As for us others, his assistants, "dry-bobs" to a man, we were something less keen. We were pleased that the sea should be of such a good safe depth as five miles, but only that we might without undue concern sail over it to Tonga, the long and hopefully anticipated Friendly Islands. It was in these happy isles that we were really interested, while the contemplation of the cold "wet-bob" job that lay between us and Nukualofa, "The Island of Love,"—obviously the home of a people something more than Friendly,—plunged our spirits in a depression only equalled in depth by that of the very Kermadec Deep itself. We looked forward with gloom to sounding in its profundities, whilst tossing about on its surface, sea-soaked, in wind and in rain, for many tedious days. Andrew, our skipper, felt other-

wise. There was about eighteen stone of him, and all of it was The Complete Sailor—sturdy, fearless, salt-pickled, and immensely interested in the Sea in all its aspects. Yet, quite properly to the traditional character of the Shipman, and perhaps also of the Scotsman, he had his sentimental side, as the following story will show.

On the evening before we were to sail he was dining ashore with friends, and had ordered his galley, with its crew of five men, to be in for him at the landing steps of the town at a certain hour, to take him back to the ship. Approaching this point at the time named he saw that the boat was there, as ordered, but that all the crew were out of her, and in the next instant he perceived that they were standing on the jetty, abreast of the steps, agreeably engaged in sweet converse with no less than seven young ladies, all of them perfectly respectable. Two of them even were there presumably as chaperons to the remainder, though they did not seem to be actually, as they certainly were numerically, *de trop*. Andrew approached, all the Commanding Officer in him thoroughly scandalised, but the large human being within that external casing had an unrestrainable twinkle in its sentimental eye.

On the shock of discovery the boat's crew

instantly broke away from the fair ones, and by the time that Andrew was ready to step down into the boat they were all on their respective thwarts, torn 'twixt Love and Duty, and wondering, no doubt, how much the Old Man had seen in the dark. Andrew, inwardly chuckling, but outwardly with a face like a sea-boot (as the saying is) for severity, was about to go down the steps into the boat when the Coxswain's girl, who as such was functioning as Leading Hand of the shore party, advanced on him. "Oh, Captain," says she, "won't you let us have ten minutes to say good-bye to our loves?" "No, no, nonsense," says the (officially) outraged Andrew. "Couldn't think of it"; and was just stepping into the boat when another of the ladies—"a very nice-looking girl," he told us later, "in a smart tailor-made dress"—ran quickly down the steps, and laying her hand on his expansive chest said, with tears in the voice, "Oh, Captain, dear, haven't you ever been in love yourself?" This was too much for Andrew. He hesitated for a moment, perhaps wondering if some soft payment in advance was to be offered for his consent, which it would be worth "hesitating" for. Whether this actually resulted we never heard, but anyway the day was lost for discipline and won for sentiment. Andrew walked,

shame-faced, up the steps again, saying, "Very well, I'll give you just ten minutes," and there-with went back to the Club, about half a mile away. He waited there for a decent though probably still insufficient interval, and then walked back again to the boat, descended firmly into it, as firmly ordered "Shove off," and left amid a chorus of thanks and a barrage of blown kisses (though not all were for him). Next morning, in the dawn of a wintry July day, we sailed.

The Naval Surveying Service has ever had foisted upon it for its work any old castaway ship that has become useless for other branches of the Navy. No one knows except those who have suffered from them how much more difficult that work—and no more essential work for the safety of the Navy can be conceived—is made for us by the aged hoodlums that are handed out for our use. But of all the old clumbungies with which the Surveying Service has been saddled, the *Penguin* would be hard to beat for clumbunginess. She was everything she should *not* have been for her special work, and the sole respect in which she was at all suitable as a surveying vessel was that her hull was of wood sheathed in copper, so that if, as must inevitably happen in an exploring vessel, she should touch on the rock for which she was

searching, or come upon it unexpectedly, less damage would be done than if she had only a thin steel plate between her and the chance of sinking.

At no time, perhaps, did the *Penguin's* limitations become more accentuated than when engaged on Deep Sea Sounding. When this takes place the ship has to be headed up to the wind and sea, and kept in a single position, steadily, for perhaps several hours, while the sounding weight, with its attached wire, is being lowered to the bottom, some thousands of fathoms down, and then wound in again. Consequently the ship required for such a purpose is a handy steam-vessel, with twin screws, steam steering gear, and no top-hamper—a ship with a good hold on the water, that will answer her helm and engines easily and immediately, for it is by these means only that she can be kept in the proper attitude for the sounding. Instead, here was a round-bottomed, three-masted, sailing vessel, with a single (auxiliary) propeller, and a rudder worked by ropes brought to a wheel, slowly moved from hard-a-port to hard-a-starboard by two perspiring, heavily labouring men. Nothing could have been more unlike “business.”

For the first two days out from Auckland we had a fair wind, and as coal had to be saved

for taking the soundings, we allowed the old ship to be blown along before it, under canvas only, and without the moderate assistance that might have been given by the screw. It would be overstating matters to describe this mode of progression as "sailing." Like St. Paul's ship, the *Penguin*—nearly of the same period in nautical development—was only able, when under sail, to drive. So to the Kermadec Deep we drave. But our orders were to sound at every fifty miles along our course; and consequently, at every six hours or so, day and night, every stitch of canvas had to be taken in, steam brought forward, and the ship turned round and got into position for the sounding. None of these were very deep—a mere two thousand fathoms or so, or two sea miles,—so that the whole operation would be over in a couple of hours. Then sail would be made again, steam pressure allowed to die down, and off we would be blown to the next delectable spot, fifty miles on.

This pursuit of Pure Science—for it was of small practical use to Navigation—was a very wearing one, not only to the ropes and sails so frequently set, taken in, and set again, but almost more so to the human manipulators thereof. And between the sail drills to bob about for a great part of each successive twenty-

four hours under cold and wintry skies, carefully watching and attending a wire running out, and then as carefully watching and attending it while it was being wound in, with the drenching salt spray whipping across the forecastle, was a desolating occupation. It had in it little of the interest, and none of the feeling, of practical utility by which one can be buoyed up by ordinary survey work and sounding, even in thoroughly bad weather. Also it was maddening to be kept standing still at each sounding spot for all those hours—hours necessarily deducted from the time we were to spend in the placid waters of those soft islands to which so slowly we were making our way.

There was at that time only one sounding to indicate the existence of the Kermadec Deep. It was a little more than four thousand fathoms, and was the deepest then known to exist in any part of the ocean.

It was my morning watch on the day on which we reached this historic spot, and it was in its vicinity that we were to make our attempt to eclipse the existing "record." That inspiring thought, however, did not make any more welcome the arrival of the corporal of Marines of the Middle Watch in my cabin with his infernal lantern. "Ten minutes to four, sir, and th' Officer of the Watch told me to

say it's bin rainin' orff an' on all the Watch, and was comin' down 'ard now." This was evident; for a cold pool from the copious drippings of his oilskin was swiftly forming in the middle of my strip of carpet, at the precise point where presently I should have to land warm-footed from my bunk, to provide me with an unnecessary foretaste of the Hereafter of misery awaiting me on deck.

A rightly inexorable etiquette (and it is even more than that) permits of no delay whatever in "relieving the deck"; and as eight bells struck, a well-thatched bundle of warm clothes, forming the husk of a very grumpy Officer of the Morning Watch, stood on the bridge in the wet darkness, ready to take over the orders from his opposite number of the Middle.

"Well, old chap, here we are, all a-taunt-o," he began, with a most misplaced cheerful sea-dogginess. "Course is N. 10° E. She's making seven and a half by the log, and we're booming along under all plain sail, with topmast and top-gallant studding sails. Here's the Skipper's Order Book. You're to call the old man at daylight, and everything is to be ready for sounding at seven. I've warned 'em in the engine-room, but you'd better give 'em another shake-up presently. So long," he said, gladly climbing down the ladder. "Wish you luck;

see you at breakfast at one bell." And before any effective reply could be given other than a grunt of gloomy acquiescence, he had disappeared for a well-earned four hours' sleep after his four hours of sea-boot weather on the bridge.

At five minutes past four "Little One Bell" struck, followed by a short squeak on the boatswain's mate's whistle, and then his harsh voice commanding "Wa-atch to mus-tah." The wretched men, who already had had four long hours on deck in the First Watch, and had just been roused from their four short hours of sleep during the Middle, to face once more the wind and the rain, went past the mustering lantern; and, this concluded, it was time for "Wa-atch to Co-coa," which included a steaming basinful, hot, thick, sweet, restoring, on the bridge. Shortly after "Big One Bell," half-past four, the rain stopped, and a few drowned stars showed between the hurrying clouds overhead. The wind was still fair, the old tub sweeping before it at—for her—a quite commendable rate, and altogether the hues of early dawn, soon to be visible, would, it seemed likely, be more roseate than at first had appeared to be possible.

At about six o'clock the Navigating Officer came up, sextant and watch in hand, to get

star-sights by which to fix the position of The Sounding in that brief period of twilight while still the stars are bright, and yet the horizon has become visible. By seven the sun was newly risen, the sails were in and furled, as per Order Book, the ship was under steam, breasting wind and sea, the men of the Sounding Party were standing by the machine on the forecastle, and there, too, like a rick under its rick-cover, the vast form of Andrew could be seen under his weather-sheeting, a very Nelson of Science, determined that he and every one else in the ship that day should do his duty and sound the Deepest Depth. Oil-can in hand, he was lubricating plenteously the sounding machine, and everything else that might be expected to "work" on this great occasion, quite regardless of the forecastle deck, or of the agonised glances of the Captain of the Forecastle, who was painfully realising that, deepest sounding or no, "all o' them spots" would have to be scraped up by him and his party in the next spell between soundings. But a Record had to be created, *coute que coute*, and every cog and pinion must swim fluently to bring it about. At last the lubricator was satisfied; the Navigator had reported a reliable result of his star-sights; the Officer of the Watch (still myself) was standing by to

control the helm and engines, and keep the ship "over the wire." With a heavy sigh of suppressed excitement and anticipation, Andrew seized the lever of the sounding machine, ordered the sounding weight to be lowered into the water, gave a cautious turn of the screw which clamps the brake of the wire drum—and off she went.

Perhaps at this point a few words of explanation may suitably be offered as to the manner in which a deep sea sounding is taken, and the appliances that are used, for these are matters known only to the very few who have to deal with the operation—namely, the submarine telegraph world, the few men of science interested in oceanography, and our practical selves of the hydrographic service.

A deep sea sounding is made by means of a weight suspended on a wire. At the present day sounding wire of much improved quality is available, but still, as in the days of which I am speaking, a single wire is used, then described technically as "Birmingham Wire gauge No. 20, galvanised." It was strong enough for its purpose, but so liable to accidents of various kinds that the getting of a deep sounding was quite a sporting event. With the newer class of wire there is less precariousness, and though the element of sport

is removed, science benefits thereby. There are two or three forms of sounding machine for use with the wire, but that adopted by the Naval Surveying Service is known from the name of its inventor as the "Lucas" machine. It is essentially simple, and consists mainly of two wheels, one of about eighteen inches in diameter, in the form of a "drum," which will hold six thousand fathoms of sounding wire, and the other about nine inches in diameter, around which the wire from the drum passes to be conducted over the ship's side. This conducting wheel has upon it a dial which registers its revolutions in terms of fathoms, showing therefore the amount of wire that has run out, exactly as a taximeter registers the mileage run by the vehicle, or rather the charges therefor. When a deep sounding is being taken, the dial on the dial-wheel is regarded with an eye equally as anxious as is that of the taximeter when on a long journey, and the shillings and pence are ticking off in their little windows on the machine. Only, after reaching the end of its run at the bottom of the sea, the obliging sea-going taxi winds back, and takes you home, bar accidents, for nothing. *O si sic omnes.*

There is a strong brake surrounding, and bearing upon, the edges of the drum that contains the wire, and this brake is cleverly con-

trolled by two springs that set it up or slacken it, automatically, in accordance with the motion of the ship, with the intention of preserving a safe and even tension on the wire as it runs out. This duty it performs if the weather is fairly fine, but if it is at all rough, and the ship rises and falls with great and sudden lurches over the waves as they pass by her, the action of the springs needs to be supplemented by a lever, worked by the skilled hand of the person taking the sounding, who must watch incessantly every movement of the ship, and act accordingly.

The weight that runs the wire out consists of two parts. There is first an iron tube, about two feet long and two inches in diameter, having a suspending arrangement at the top for attachment to the wire. At the bottom of the tube, just inside the base, there is a simple form of non-return valve, consisting of two little steel doors, hinged across the diameter of the tube, so made that they will only open inwards in response to outside pressure; but when any weight comes on them from the inside, the doors close, and that which causes the inside pressure is retained in the tube. This valve is for the purpose of bringing up a specimen of the material which forms the ocean bottom at the point where the sounding

is made. Such material may be said never to be hard or unyielding. Either there is "ooze," or else some clayey substance, so that when the tube strikes bottom it is buried in the bottom material for a few inches, the non-return valve opens to admit some of it into the tube, and then, when the tube is drawn up, the doors close, and the material is retained for the edification of science. But the specimen is not merely of scientific interest as such, for it gives assurance—and it is the only possible assurance—that the bottom has actually been reached. In fact, so important is this evidence considered by hydrographers that a deep sounding recorded without having obtained a specimen of the bottom is regarded with grave suspicion, and the number of fathoms said to have been obtained is only inserted temporarily on the charts until something more worthy of credence can be offered.

The sounding tube, or, to give it its technical name, "The Driver Rod" (so called because it is driven into the bottom, and in its early form was indeed a rod and not a tube), weighs only twenty pounds, and if used by itself would be altogether too light for carrying down the wire. Moreover, it would not "drive" into the bottom at all. Accordingly, two cone-shaped lumps of cast-iron are attached to the

driver rod in such a manner that when the bottom is reached and the tube has, by their weight, been driven into the ground, they will drop off, having done all that is required of them, and be left down there. (At surveying ship tea-parties, when this is explained, it causes ever the gravest Admiralty scandal to the economical minds of all ladies who hear of this reckless waste of good cast-iron sinkers, value fourpence each.) But it must be so. Sounding wire is none too strong for its job. Its breaking strain, two hundred and forty pounds, can easily be approached when the wire is being wound in after a sounding on a day of bad weather in any sudden violent upward heave of the ship, even when the tube *without* the weights is being brought back to the surface. The fifty pounds of sinkers must therefore be dropped, or there would be a good chance that driver rod, wire, and all would be lost on the return journey from the bottom.

There is still another point to be mentioned—namely, the temperature of the bottom water of the ocean, for the inquisitiveness of Science descends even to this. A thermometer which will register the least temperature reached during a sounding is attached to the wire at a short distance above the driver rod. These

thermometers are very special instruments, as they have to be tested to withstand the immense pressure, something over three tons to the square inch, which exists below three thousand fathoms. The temperature at the greater depths is only just above freezing, and even at two thousand fathoms it is, in all latitudes, tropic or arctic, as low as 35° Fahrenheit. Andrew used to tell us that in the *Challenger*, before the days of wire-sounding, or of ice-making machines afloat, the thirsty men of science in the ship thought to take advantage of this piece of their special knowledge, and on a hot tropical day near the beginning of the voyage, when a deep sounding was about to be taken, they attached to the hempen sounding-line, near the sounding weight, and thus sent down to be cooled certain bottles of beer. After the sounding had been got, and while the line was being reeled in, they stood waiting, corkscrews and glasses in hand, each of them consumed by a thirst that was apparently as quenchless as their thirst for oceanic knowledge. Whatever gods there be down there were, however, equally thirsty, for when the bottles came again to the surface, although the capsules were still intact, and the cork of each bottle was still in its right place, when the contents came to be poured out, they were found to be the very best sea-water,

and that the original beer had entirely disappeared. The immense pressure, it was then revealed to Science, had forced the surrounding sea-water into the bottles through the pores in the corks, and had forced out the beer (which was of a much less gravity and pressure), cruelly to be wasted in those dim regions below. Science, however, still was determined to have its cold drinks, and another plan was thought out. The *Challenger* was engaged not only on Deep Sea Sounding, but also in dredging up the bottom ooze, in quantities to be measured in tons at a time, from depths of from one thousand to two thousand fathoms. The dredge would be lowered down and dragged along the bottom at a speed of about one mile an hour, and at the end of such period was hauled to the surface, and hoisted on board. On such occasions, but preferably when the sun was over the fore-yard—namely, at about six bells in the forenoon watch,—these determined men stood in a row on the deck awaiting the arrival of the bottom specimen, each with his bottle of rather warm beer in his hand. As soon as the contents of the dredge had been capsized out, and lay in a large and oozy heap on the deck, there was a rush to plunge the bottles into its still cold heart before, I regret to say, any scientific examination of its composition

had been attempted. The pursuit of knowledge, in fact, was at a standstill until first the interior temperature of the bottles and subsequently that of each of the bottle owners had been lowered from the 85° of the upper air to the 40° or less of the muddy ocean floor. Strangely enough, I have not been able to find either of these scientific doings recorded in the narrative of the *Challenger's* voyage, and am consequently all the more pleased to be able now, after a lapse of more than fifty years, to give them to the public. They shed a new and pleasingly human light on the austere men who spend their lives in these inhuman investigations. They are now after all seen to be possessed of the forenoon thirst common to seafaring mankind in general, and, like them, to prefer their drinks to be pleasantly *frappé*.

An hour had gone by since the first plunge of the sinkers, and all had gone well. The ship had been lurching up and down on the waves in her usual manner, but not severely. Andrew had remained crouched over the machine, brake-lever in hand, regarding anxiously every foot of the wire as it had run out, keeping it from over-running, kinking, and breaking on the downward heaves of the ship, and from over-strain on the upward; whilst I, his assistant, with helm signal flags and whistle, had had

less difficulty than usual in keeping the ship up to the wire and the wire "up and down"—the two attitudes of ship and wire necessary for a good sounding. It was horribly cold and wet, for there was in the *Penguin*, just below the sounding platform, a gun embrasure which, on the downward dip of the ship, would be plunged under the crest of the advancing wave, and when the ship lifted to it, the wind would skim the water thus received off the floor of the embrasure and scatter a stinging douche over the whole sounding party, glued as we were to the spot, and compelled to endure it without flinching. But one was well protected against it: it was only the salt slap in the face that was so unpleasant, and old Andrew under his rick-cover seemed almost to enjoy it. It merely freshened him up. At 8.30, when my watch came to an end and I was relieved, the wire was still running out gaily. As for the skipper, he had washed and dressed and breakfasted long before the sounding began at 7 o'clock. These minor matters were not to be allowed to interfere with or to interrupt his morning's enjoyment. Alas! for it turned into a long day's enjoyment. Before it had finished, I daresay that even to Andrew its pleasures had begun to pall. Breakfast was just over. The ship's company forward were

all standing about, smoking, under the lee of the forecastle, and the officers were aft, similarly occupied, under our particular lee, the poop; but all eyes, forward and aft, were fixed on the wet little group on the starboard side of the forecastle deck. Suddenly there was a stir in its midst, and the black hitherto unmoving mound that was Andrew became a thing of life, and upreared itself from its tender crouching over the sounding machine. Had bottom at last been reached, and at what depth? But when it turned itself in our direction we saw that the thing of life had a face of death; and when we saw that the men of the sounding party were not engaged in any of the regular operations that should follow the striking of the bottom, we all realised that something awful had happened. It had. A brand-new coil of wire had been wound on the sounding machine for this very special sounding, and when four thousand three hundred and sixty fathoms had run out there happened to be at this point a join in the wire, or, as we term it, a "splice." It had been noticed, of course, when being wound on the drum, and had then been critically examined by the experts, who considered it to be "just as strong and safe as any other part of the coil." When it was seen that it was about to leave the drum Andrew

allowed the extra thickness caused by the splice at that point to go out slowly and carefully, for this is always rather a ticklish operation. It went out safely, with a sigh of relief from all standing by, for now at last the former "greatest depth" had been exceeded, and a halo of glory was beginning to form, when, in one fatal second, its beams were withdrawn.

The dial wheel gave an unexpected nod, and the wire ceased to run out. Not believing his eyes, Andrew reached out with his hand and touched the wire below the dial wheel: it was quite slack. A handle was put on the axle of the wire-drum, and after about twenty revolutions up came the end of the wire. When only a few fathoms below the surface the splice had "drawn." The strain upon it of the weight of the great length of wire below it had been too great; the solder and seizings that held the splice gave up, and everything had gone down to an unrecorded depth below. It was an immense disappointment—four thousand three hundred and sixty fathoms of a disappointment; but the day was yet young, there was still plenty of wire in the store-room, the accident had been "nobody's fault," hope springs eternal, and anyway, here we certainly were over the deep spot, and "another shot" must be made. Accordingly, up came

a new coil of wire from the store ; it was reeled on to the sounding-machine drum, and there was our undefeated Andrew again at the lever, and the new wire running out, singing its small metallic song, a thin and tinkling note, as it did so. There were no splices this time, and at last, at the end of about two hours, bottom appeared to be struck at four thousand nine hundred and forty fathoms. I say "appeared to be struck," because at this great length of wire, rather more than five and a half English miles, it is extremely difficult to detect when the sinkers have reached the end of their journey, and have been dropped on the bottom. During the first few hundred fathoms the wire runs out at a speed of something under two minutes to the hundred fathoms, but this speed steadily lessens as the weight descends, though it might be expected that the ever-increasing weight of wire above it would cause the speed to increase also. The reason is that the effect of the increase in weight is more than countered by the greater friction on both sinkers and wire under the immense and also increasing pressure through which they are descending. The wire therefore runs out more and more slowly, and by the time that four thousand fathoms have unreeled, its pace has become a mere dribble, every fathom of which

as it crawls out is anxiously regarded by the officer taking the sounding and working the brake-lever, knowing that the end of the journey must be near. Up to depths of two thousand fathoms the striking of the tube on the bottom is quite definite: the dial-wheel gives a nod, you feel a slight shock on the brake-lever, and the running out of the wire is checked altogether for an instant, before beginning again very slowly, when it must instantly be stopped by the brake. But when the depth is over four thousand fathoms and bottom is reached, there is no such definiteness. The check on the wire when the tube strikes is so slight that it is scarcely noticeable, and immediately afterwards the wire continues to run out of its own weight—just a little more slowly than before, but that is all. If this slight check and slackening of speed is not noticed, and if consequently the wire is allowed to over-run for even a few fathoms on the bottom, it is, or in those days was, absolutely fatal as regards the recovery of the driver rod. It was the fiendish habit of the older sounding wire when thus paid out on the bottom not to lie there in placid even coils, but to twist itself up into hoops and kinks; and when, later on, winding in of the wire began, directly strain came on one of these kinks, it promptly broke

at that point, or, as sailors express it, "it parted." This was the first sounding to be taken at such a depth, and nobody, not Andrew himself, had had any experience of what the wire would "feel like" on the brake-lever, or what it would do when bottom had been reached and the sinkers had been released. There was really no need for the Old Man to blame himself so bitterly as he did for what happened. He was the first that ever burst into so enormously deep a sea. Seeing, but too late, that by the still lessened speed of the wire, bottom had probably been reached, he screwed up the brake and stopped the slow dribble of the wire. Then he ordered the handles to be put on the machine, and thus wound up about twenty fathoms of wire, so as to clear the tube from the bottom. The wire came in fairly easily, and it seemed evident that the two sinkers had been dropped. With a sigh of exultation he ordered the driving band from the deck donkey engine to be brought to the sounding-machine, and soon the wire was buzzing in quickly and winding up on the drum. All too quickly. The fourth, third, and second thousands reeled in happily by the dial, but by the time that "one thousand fathoms" had been reported by the dial-reader it was plain that the wire was coming

in too fast to be healthy. When the last hundred fathoms was showing on the dial it was certain that something was wrong, for the wire was quite slack, and presently in flew the end of it—the bitter end indeed! It had parted at a few fathoms above its attachment to the driver rod, and there was no doubt but that it had been coiled on the bottom, after the sinkers had been dropped, and that when the strain of heaving up had come upon it, the wire had kinked and broken short off. This was altogether too much for the hitherto undaunted Andrew.

Two disasters in one day! Close on ten thousand fathoms lost over this one sounding, together with two driver rods and two of those precious deep sea thermometers—and only one “negative” sounding to show for it. Had tears been possible to those horny and salt-seasoned eyes, he would have wept. There was no doubt, of course, so far as we in the ship were concerned, as to bottom having actually been reached in four thousand nine hundred and forty fathoms as registered; but without the recovery of the bottom specimen it was as unconvincing, when placed on the chart, as that biggest fish of all which got off the hook on the day when the fishing liar was out by himself without the gillie. There are several

"deepest casts" of this character reported from up and down the Western Pacific, and there are several ways in which they may have been obtained without the bottom having been reached at all. For example, the ship may have been drifting, all unknown, on some oceanic surface current during the time the wire was running out. It would be possible thus to drift for a distance of two thousand fathoms in, say, two hours; and in such a case, if the true perpendicular depth was five thousand fathoms, the dial on the sounding-machine would record a depth of five thousand four hundred fathoms—the diagonal distance taken by the wire, and thus an untrue "record." On such occasions no bottom specimen is as a rule recovered, because when the driver rod is descending in this way at an angle, the sinkers easily disengage and slip off before bottom is reached. That is one reason why a very deep sounding recorded without a "bottom specimen" is considered of little value. Andrew felt that his "deepest cast" would rightly be regarded as suspiciously as these others, although in this part of the Pacific it happened that there was no oceanic current sufficient to vitiate his results. There was no way of describing on a chart the accident that had happened; his labour was as good as lost.

By this time it was quite late in the afternoon. It had been a long, tiring, and infinitely depressing day, and in any case the night was coming on in which no man may take a really deep and authentic sounding such as we desired. So the old ship was put on her course to the northward once more, and orders were given to refill the machine with wire, and to have everything ready for sounding at daylight on the following morning. That would be in the ordinary routine when on passage, and not necessarily to try again for a "deepest spot." At that time no one knew what the extent was of the Kermadec Deep, and we might still be over it in the morning, or again we might not be when we had reached the end of the sixty or seventy miles that would then separate us from our present position.

Accordingly, at 7 A.M. next day, Andrew again directing proceedings, away went a new driver rod and a new thermometer on its downward path of exploration. Eight o'clock came, nine o'clock, and still the wire was descending. Considerably more than four thousand fathoms had run out, and obviously we were still in the "Deep." Reviving hope and a suppressed excitement everywhere prevailed. Affairs had become so critical that there had been no "Divisions" at the usual 9.15, nor "Prayers."

Nobody had been told off by the first lieutenant for the usual daily jobs about the ship, and most of the men were gathered below the forecastle on the starboard side, gazing up at the sounding-machine. There was the skipper bending over it, his great form tense with anxiety, the Sounding Party standing by him, and several of us officers behind, off duty, but now interested in the approaching possibility of a "Record," listening with all our ears to the dial-reader calling out the hundreds of fathoms as they went out. "Four thousand five 'undred—six 'undred—seven 'undred," and so on up to "nine 'undred," and still the wire was running out steadily, though now very slowly. "Five thousand'," and a real thrill went through every one. We had surpassed even yesterday's cast! Another hundred crawled out, and then fifty-five more, and at that point there was a small, a very small, check, and a barely perceptible slackening of the speed.

Andrew, not to be caught a second time, set up the brake at once, and ordered "On handles; heave up." It was all that four men could do to heave the handles round, and obviously the weights had not slipped, but after great exertion they wound the wire in until the dial reading was ten fathoms less

than the point at which there had been the first little check. Then the brake was again set up, and a second attempt was made to drop the weights by a sudden letting go to the bottom. But when the handles were put on after that, it was evident that the second attempt had not been more successful than the first. A third "dunt" was made on the bottom accordingly, and this time evidently all was well, for when the handles were put on for the third time, it was comparatively easy to heave round on them. The sinkers had at last been disengaged, and the sounding, so far, was safe. A final reading of the dial was solemnly taken by all of us as a "check," and showed that there was no mistake about it, and that the magnificent depth at that spot was five thousand one hundred and fifty-five fathoms. But now came the "heaving in." The handles were still on, and for safety's sake the men were ordered to heave up a full fifty fathoms first of all, in order to be more than sure that the tube was this time certainly clear of the bottom before beginning to heave in the rest of it by steam in the usual manner. While this winding in by hand was proceeding, Andrew was watching the spring-balance on the sounding-machine which indicates in pounds the strain on the wire at

any time. As the ship rose and fell on the swell he saw that on the upward thrusts of the ship the men were obliged to stop work on account of the heavier drag on the wire at those times, which, with some dismay, he noticed approached closely the 240 lb. that was its breaking strain. What, then, he considered, would happen under the remorseless revolution of the steam-engine when its tireless strength should be brought to the work, taking no account of the ship's motion, nor of breaking strains ?

It was obvious that the already small limit of safety would be exceeded, and that a bare end of wire, parted at its weakest point, would again be the cheerless result of a long day. He ordained accordingly that the whole length of wire must be wound in by hand, and that the men on the handles must stop work whenever the strain shown on the spring-balance approached 200 lb. So this was done.

The whole ship's company was told off in relieving parties of four, and for three and a half mortal hours they slowly, slowly, but safely, safely, wound the wire in. At last the length of small rope which connects the end of the wire to the driver rod came into sight. The leading hand of the Sounding Party leaned out and hauled it in, until first the thermometer

appeared, reading 32°.9 Fahrenheit, and then the longed-for driver rod itself. We still were not entirely assured, however, that the bottom had actually been reached. Though everything in this case seemed to have gone exactly as it should, we still awaited the final confirmation. It was soon received. On its arrival on deck Andrew seized the tube, unscrewed its lower section, and there, safe enough, held in by the non-return valve, was the precious burden it bore, half filling the interior, and consisting of a material which resembled brown mud, but is known to oceanographers as "red clay." The three "dunts" on the bottom had been successful in digging up an unusually large quantity of "specimen."

A special plate and spoon had been provided for the occasion by the hopeful Andrew, and the lump of clay was soon scooped out to the last clinging fragment. Commonplace as it appeared, it did not require much imagination to be impressed by it as it lay there on the plate, for we realised that we saw before us that of which the very foundations of the earth are made, and also that we were the first to see land that came from a depth below sea-level which was just a little more than the height of snow-topped Everest is above it.

With a sigh of triumph old Andrew descended

the forecastle ladder bearing the precious morsel to be examined under the microscope, and then to bottle it for sending home to the Hydrographer at the Admiralty, with the report of the sounding.

It formed incontrovertible evidence that bottom had truly been reached in the tremendous abyss from which it had come up. His labour and perseverance lay rewarded and concentrated in that little dollop of muddy clay.

The ship was put on her northward course once more, and the pipe to "Make plain sail, set starboard studding-sails," went whistling along the decks. We were off to Tongatábu.